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No. 7

ECONOMIC BRIEF WITH RESPECT TO THE
PROPOSED MILK MARKETING AGREEMENT FOR THE TOPEKA, KANSAS
MARKETING AREA

by

P. L. Miller
Principal Agricultural Economist,
Dairy Section,

and

Henry I. Richards,
Senior Agricultural Economist,
Dairy Section.



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Part I

The Economic Emergency with respect to milk producers in the area which supplies milk to the Topeka market.

The average prices received by farmers for fluid milk testing 3.5 percent butterfat, delivered to dealers on the Topeka market declined steadily from \$2.30 per hundredweight in 1929 to \$1.13 in 1933---a decline of 47 percent. Since 1933 the price has risen to \$1.53 per hundredweight in 1934 and #1.91 in 1935, partly as a result of curtailment of supplies due to the drought in 1934, to higher prices for feed, and to improved demand conditions. While prices paid by farmers in the United States for commodities bought also declined from 1929 to 1933, the decline was somewhat less than that of milk prices on the Topeka market. The index of prices paid by farmers for commodities bought declined from 153 (1910-1914 = 100) in 1929 to 109 in 1933, and then increased to 123 in 1934 and 125 in 1935. (See Table I). Thus there was a marked decline in the purchasing power of fluid milk sold on the Topeka market from 1929 to 1933, in terms of the commodities bought by all farmers in the United States. Since then, however, the purchasing power of milk sold on this market has increased. The increase in the purchasing power of milk sold by dairy farmers in this area, however, has probably been less than the increase in purchasing power of milk sold by all farmers in the United States, due to the large increase in price of feeds as a result of the drought in 1934 which was severe in the Topeka area. In 1935 the average price of 1000 pounds of milk on the Topeka market was equivalent to the average farm price in Kansas of 21 bushels of corn, 1.4 tons of alfalfa hay, or 1080 pounds of cottonseed meal. In 1929 it was equivalent to 30 bushels of corn, 1.9 tons of hay, or 970 pounds of cottonseed meal.

The gross income of farmers from milk produced in Kansas declined sharply after 1929. In 1934, it was only \$31,940,000 compared with \$54,416,000 in 1929 - a decline of 41.3 percent (See table 2). There was a similar decline in the United States as a whole and there is no reason to expect that the decline in the area from which Topeka obtains its milk supply has been materially different.

The cash income from dairy products sold from farms in Kansas declined from \$42,917,000 in 1929 to \$25,104,000 in 1934 - a decline of 41.5 percent or practically the same as the decline in the gross income from milk produced, compared with a decline of only 20 percent in the prices of things that farmers buy. (See table 3). While the cash income of farmers from dairy products sold from farms in the area from which Topeka obtains its milk supply are not available it is only reasonable to expect that the changes have been similar to those for the State of Kansas. This assumption seems reasonable in view of the close relationship between changes in cash income from dairy products in the State of Kansas and the United States as a whole, (See table 3) and the close relationship between prices of dairy products throughout the State of Kansas and the United States as a whole, as shown - Part IV.

Table 1. Prices received by farmers for fluid milk sold on the Topeka Market, farm prices of whole milk, butterfat and butter in Kansas, and index numbers of prices paid by farmers in the United States for commodities bought, by years, 1919 - 1935

Year	Dealers buying price per cwt. of 3.5% raw milk delivered FOB Topeka, Kansas	Kansas farm price of milk per cwt.	Kansas farm price of butterfat per pound	Kansas farm price of butter per pound	Index of price paid by farmer for commoditie bought - U. S. (1909-14=100)
		Dollars	Dollars	Cents	Percent
1919	3.46	3.25		49.5	202
1920	3.38	3.08		51.2	201
1921	2.25	2.16	33.6	34.0	152
1922	1.70	1.90	30.5	30.8	149
1923	2.15	2.30	39.1	38.2	152
1924	2.08	2.09	35.2	37.5	152
1925	2.05	2.13	37.2	38.9	157
1926	2.07	2.13	36.0	39.8	155
1927	2.12	2.20	39.0	40.9	153
1928	2.22	2.23	41.7	42.7	155
1929	2.30	2.18	41.8	43.6	153
1930	2.10	1.90	29.5	34.7	145
1931	1.77	1.48	21.3	26.7	124
1932	1.20 ^{1/}	1.10	14.6	19.6	107
1933	1.13	1.08	16.3	19.0	109
1934	1.53	1.32	20.6	22.6	123
1935	1.91 ^{2/}	1.50	26.0	28.7	125

Compiled from reports of the Bureau of Agricultural Economics.

1/ Six Months average.

2/ Basic price - price paid for milk used in fluid form for city distribution.

The foregoing facts and considerations demonstrate conclusively that, in the Topeka milk shed and the State of Kansas, there was a marked decline, during the period 1929-1933, in (1) the prices received by producers for milk sold wholesale, (2) the purchasing power of such milk, (3) the gross income from milk produced on farms, and (4) the cash income from dairy products sold from farms. According to available data for the years 1934 and 1935 there was only partial recovery in such prices, purchasing power and income.

Table 2. Gross Income from Milk produced on Farms in the United States, and in the State of Kansas, supplying Milk to the Topeka, Kansas Marketing Area, and percentage decline from 1929, in such Gross Income, 1929 - 1934.

Year	United States		Kansas	
	Gross Income <u>1,000 Dollars</u>	Percent decline from 1929 <u>Percent</u>	Gross Income <u>1,000 Dollars</u>	Percent decline from 1929 <u>Percent</u>
1929	2,322,553	-	54,416	-
1930	2,030,853	12.6	45,601	16.2
1931	1,614,394	30.5	38,044	30.1
1932	1,260,424	45.7	28,610	47.4
1933	1,262,554	45.6	28,578	47.5
1934	1,421,253	38.8	31,940	41.3

Compiled from reports of the Bureau of Agricultural Economics, Division of Crop and Livestock Estimates.

Table 3. Cash Income from Dairy Products sold from Farms in the United States, and in the State of Kansas, supplying Milk to the Topeka, Kansas Marketing Area and percentage decline from 1929 in such cash income, 1929 - 1934.

Year	United States		Kansas	
	Cash Income	Percent Decline from 1929	Cash Income	Percent Decline from 1929
	1,000 Dollars	Percent	1,000 Dollars	Percent
1929	1,847,235	-	42,917	-
1930	1,615,363	12.6	36,295	15.4
1931	1,278,531	30.8	30,508	28.9
1932	985,099	46.7	22,780	46.9
1933 ^{1/}	988,880	46.5	22,472	47.6
1934 ^{1/}	1,114,016	39.7	25,104	41.5

Compiled from reports of the Bureau of Agricultural Economics, Division of Crop and Livestock Estimates.

^{1/} Includes benefit payments and Government purchases.

Table 4: Cash income from all farm products and percentage cash income from dairy products was of cash income from all farm products, 1929 - 1934.

Year	United States		Kansas	
	Cash Income From total Farm Production	Percent which cash income from dairy production is of total cash income from farm production	Cash Income From total Farm Production	Percent which cash income from dairy production is of total cash income from farm production
	<u>1,000 Dollars</u>	<u>Percent</u>	<u>1,000 Dollars</u>	<u>Percent</u>
1929	10,284,479	18.0	418,815	10.2
1930	7,987,606	20.2	311,424	11.7
1931	5,795,148	22.1	230,430	13.2
1932	4,368,296	22.6	146,245	15.6
1933 <u>1/</u>	5,402,094	18.3	172,114	13.1
1934 <u>1/</u>	6,261,123	17.8	225,171	11.1

Compiled from reports of the Division of Crop and Livestock Estimates, Bureau of Agricultural Economics, U. S. Department of Agriculture.

1/ Includes benefit payments and Government purchases.

Part II

The Importance of Dairy Farming as an Agricultural Enterprise in the Area Supplying milk to Topeka.

The importance of milk production as an agricultural enterprise in Kansas is indicated in Table 3.

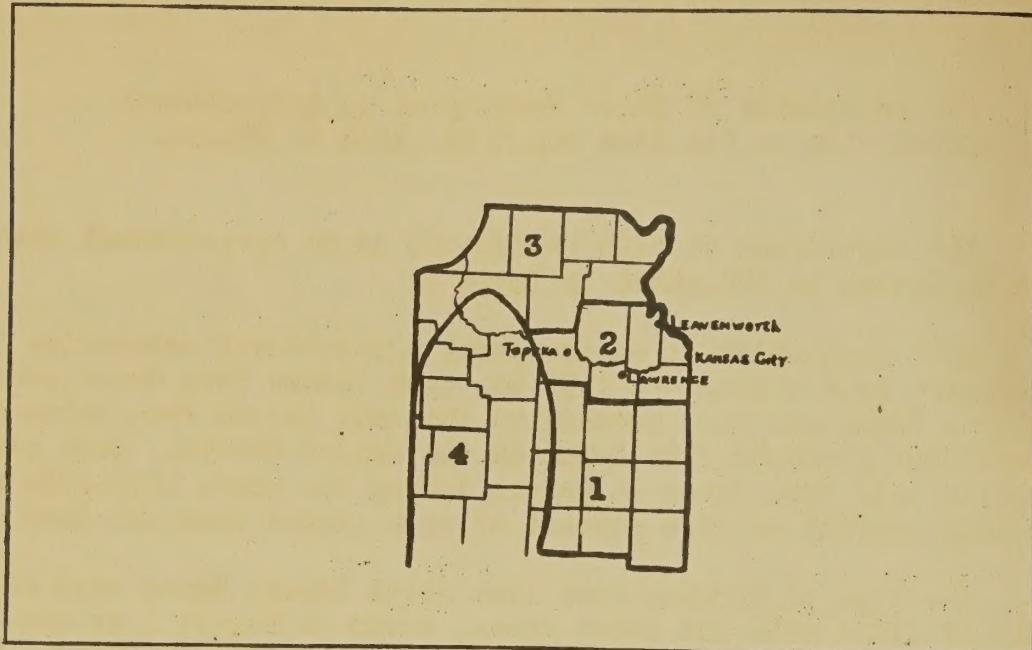
Milk production is an important agricultural enterprise in the country as a whole. In 1929 the cash income from dairy products sold from farms was 18.0 percent of the cash income from sales of all agricultural products from farms in the United States. Cash income from milk sold from farms in Kansas during the years 1929-1934 varied from 10.2 percent to 15.6 percent of cash income from all farm products.

The type of farming area from which Topeka draws most of its supply of fluid milk and sweet cream, shown in Figure 1 as area 2, is the most important whole-milk producing area in the state. Dairy-ing holds first place among live-stock enterprises in this area. "Practically all of this area is in the trade territory of one or more large towns such as Kansas City, Topeka, Lawrence, or Leaven-worth." ^{1/} In 1929, 11.2 percent of the farms received 40 percent or more of their income from the sale of dairy products according to the United States census.

Such being the case, activity directed toward the enhancement of prices to producers and financial returns from milk production in the area supplying milk to the Topeka Marketing Area is warranted and necessary to effectuate the policy of Congress as stated in the Agricultural Adjustment Act.

^{1/} Types of Farming in Kansas, Kansas State Agricultural Experiment Station Bulletin No. 251 p. 37.

Figure 1: TYPE OF FARMING AREAS IN THE TOPEKA, KANSAS, SUPPLY AREA



AREA 1:- General farming is followed in Area 1. Corn is more important and oats and wheat are less important than in the area just below where corn, wheat and oats are fairly well balanced. Grain sorghums are relatively important. There is considerable hay and pasture. Dairying and poultry are somewhat more important than in the area just below where dairying and poultry are important enterprises.

AREA 2:- General farming also is followed in Area 2. Dairying, especially whole milk production, is common. Corn is the predominant grain crop and is followed in importance by wheat and oats. Alfalfa is the chief hay crop. Poultry are important.

AREA 3:- This area is in the corn belt. Corn and hogs are most important, with wheat and oats comparatively unimportant. Beef cattle, alfalfa, and poultry are important enterprises.

AREA 4:- This area includes the long-grass grazing region comprising chiefly the Blue Stem belt. Corn and sorghums are the chief feed crops. Wheat is sometimes grown on the more level land. Cattle are shipped in for the grazing season. Some cow herds are kept and a small proportion of the steers are fed either on grass or later.

Part III

Comparison of the Prices Specified in the Proposed Marketing Agreement for the Topeka Marketing Area with Parity Prices for Milk Supplying the Topeka Marketing Area.

Section 2 of the Agricultural Adjustment Act, as amended on August 24, 1935, states that it is the declared policy of Congress "(1) Through the exercise of the powers conferred upon the Secretary of Agriculture under this title, to establish and maintain such balance between the production and consumption of agricultural commodities, and such marketing conditions therefor, as will reestablish prices to farmers at a level that will give agricultural commodities a purchasing power with respect to articles that farmers buy, equivalent to the purchasing power of agricultural commodities in the base period; and, in the case of all commodities for which the base period is the pre-war period, August 1909 to July 1914, will also reflect current interest payments per acre on farm indebtedness secured by real estate and tax payments per acre on farm real estate, as contrasted with such interest payments and tax payments during the base period. The base period in the case of all agricultural commodities, except tobacco and potatoes, shall be the pre-war period, August 1909 to July 1914. In the case of tobacco and potatoes, the base period shall be the post-war period, August 1919 to July 1929 . . ."

In section 8e of the Agricultural Adjustment Act, as amended, it is provided that "In connection with the making of any marketing agreement or the issuance of any order, if the Secretary finds and proclaims that, as to any commodity specified in such marketing agreement or order, the purchasing power during the base period specified for such commodity in section 2 of this title cannot be satisfactorily determined from available statistics of the Department of Agriculture, the base period, for the purposes of such marketing agreement or order, shall be the post-war period, August 1919 to July 1929, or all that portion thereof for which the Secretary finds and proclaims that the purchasing power of such commodity can be satisfactorily determined from available statistics of the Department of Agriculture."

In the case of milk produced for sale in the Topeka Marketing Area, available statistics in the Department of Agriculture with respect to the August 1909 to July 1914 base period are inadequate for the proper determination of the August 1909 to July 1914 base period price for milk. Parity prices for milk sold by producers to handlers in the Topeka Marketing Area have been determined, therefore, from available statistics in the Department of Agriculture with respect to the period 1919 to 1929, inclusive. The parity prices per pound of butterfat so determined for Class I milk are shown in Table 5. They indicate that the prices specified in the proposed marketing agreement for the Topeka Marketing Area are within the parity price limits set by the Agricultural Adjustment Act, as amended.

As of March, 1936, the latest date for which figures are available, the parity price for butterfat in Class I milk f.o.b. city as determined for the Topeka Marketing Area was 49.7 cents per pound.

Table 5.

TOPEKA, KANSAS: Index of prices paid by farmers for commodities bought, index of seasonal variation, prices per pound butterfat of Class I milk, and parity prices adjusted for seasonal variation, average August 1919-July 1929, by years, 1930 to 1935, and by months, 1936.

Year and Month	Index of prices paid by farmers for commodities bought	Index of seasonal variation West North Central Section	Price per pound butterfat of Class I milk 3/	Parity ad- justed for seasonal variation
	Percent	Percent	Paid by dealers 1/	
August, 1919 to July 1929	100.0		65.2 2/	
1930	90.4			58.9
1931	77.3			50.4
1932	66.7			43.5
1933	68.0			44.3
1934	76.7			50.0
1935	78.0		52.8	50.9
1936				
January	76.1	103.2	50.0	51.2
February	76.1	102.2	50.0	50.7
March	75.5	100.9	50.0	49.7
April		99.0		
May		97.1		
June		96.0		
July		96.5		
August		97.7		
September		99.5		
October		101.3		
November		103.0		
December		103.6		

1/ License price quoted from 1935 on.

2/ Calculated by applying the ratio between the average wholesale selling price of bulk milk for November 1934 to February 1936, and the weighted average buying price of milk used as fluid milk or cream under the license during the same period, to the average wholesale selling price in the base period.

3/ Class I milk means (1) all milk sold or distributed by distributors within and without the Sales Area as milk, and (2) all milk used by distributors to produce cream for consumption as cream.

Part IV

The Character of the Commerce in Milk in Topeka
Marketing Area.

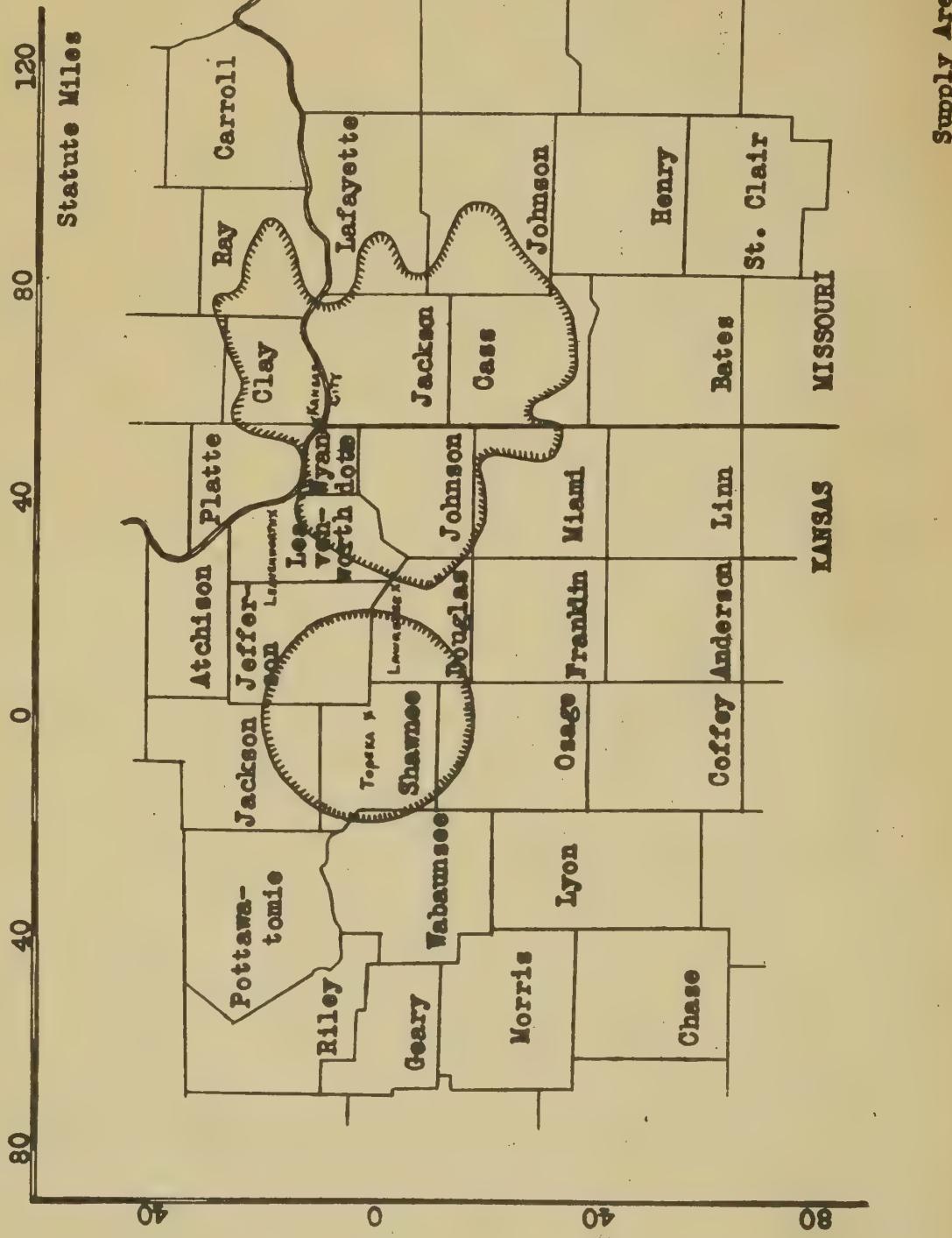
The milk sheds of Topeka, Kansas and Kansas City, Missouri, are closely inter-related, as shown by Figure 2. Both draw part of their fluid milk supplies from the Lawrence, Kansas milk shed. There is, in fact, a rather direct relationship between the price structure of these markets as well as those of Kansas City, Kansas, and Leavenworth, Kansas. For instance, price cutting on the Topeka market would naturally cause some producers usually supplying this market to send their milk to Lawrence, Kansas. The resulting increase in supply would tend to force prices down in Lawrence, Kansas, and cause some producers normally supplying this market to send their milk to the Kansas City, Missouri market. The resulting increase in milk supplies in the Kansas City market would tend to force prices downward in line with those on the Topeka market. While the volume of milk that might be shifted to the Kansas City, Missouri market as a result of price cutting in Topeka would be small, it may be noted that only small changes in supply probably would be necessary to keep the price structure of both markets in alignment with each other. The closeness of this relationship is clearly demonstrated by Figures 3 and 4 showing average annual prices paid by dealers for milk testing 3.5 percent butterfat, and received by dealers for milk sold to the wholesale trade on the Kansas City, Missouri and Topeka, Kansas markets since 1920.

During 1934 and 1935, Kansas City, Missouri obtained more than 25 per cent of its milk supply from Kansas as shown by table 6.

The area from which Topeka, Kansas and Kansas City, Missouri draw their sweet cream supply over-laps to a much greater extent than that for fluid milk. While a large part of the cream sold in each of these markets is obtained from fluid milk receipts in excess of the quantity sold as whole milk, some sweet cream is also obtained from farms outside the fluid milk shed. During the summer months cream is shipped into Topeka from Missouri and Nebraska for use in the manufacture of ice cream. The producing area supplying the Topeka market during most of the year, however, is a surplus cream-producing area. Sweet cream is, in fact, at times shipped from Topeka to Lincoln, Nebraska and other cities in the United States outside of Kansas. While the exact amount of these shipments are not available, receipts of cream in important cities of the United States from Kansas indicates the interstate character of the market for surplus cream produced around Topeka. (See Table 7.) Furthermore, changes in the price of cream in Boston since 1928 have corresponded very closely to changes in the price of butterfat in Kansas and Missouri (See Figure 5).

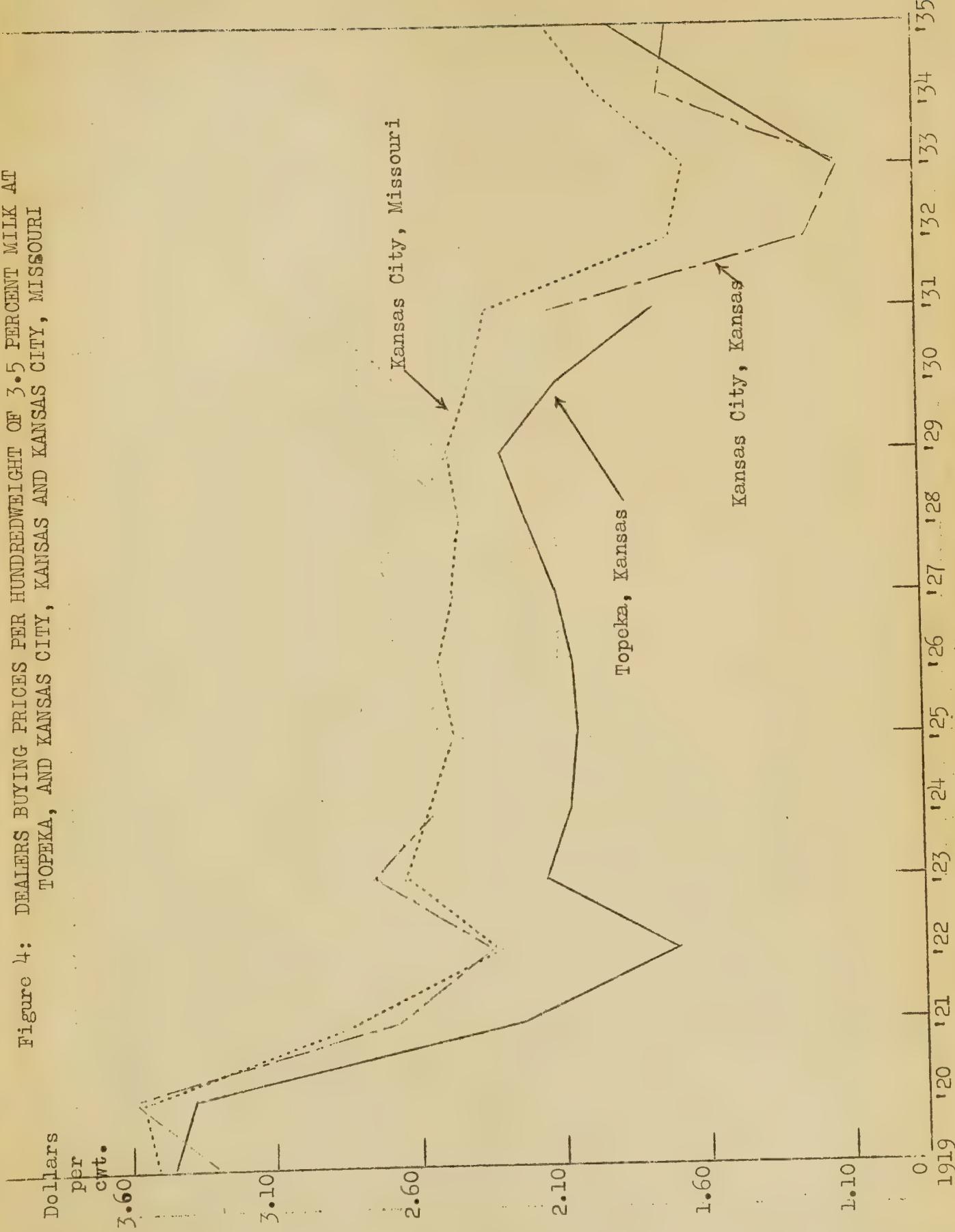
Butter manufactured in Topeka, Kansas is shipped to Kansas City, Missouri, Chicago, Illinois, New York and other out-of-state markets. Topeka is somewhat of a center for the manufacture of butter. Several large creameries are located in the city. The cream from which this butter is made is bought at cream stations, and stores scattered throughout a territory of approximately 75 to 100 miles. While the actual amount of butter shipped

Figure 2: TOPEKA, KANSAS AND KANSAS CITY, MISSOURI, MILK SUPPLY AREAS



Supply Areas

Figure 4: DEALERS BUYING PRICES PER HUNDREDWEIGHT OF 3.5 PERCENT MILK AT
TOPEKA, AND KANSAS CITY, KANSAS AND KANSAS CITY, MISSOURI



Basic Prices: Kansas City, Kansas and Missouri--1931-1935; Topeka, Kansas--1933-1935.

Figure 3: Fluid Milk Dealers selling prices, wholesale trade, per gallon in bulk lots,
of 5 - 20 gallons in Topeka and Kansas City, Kansas and Kansas City,
Missouri, 1920-1935

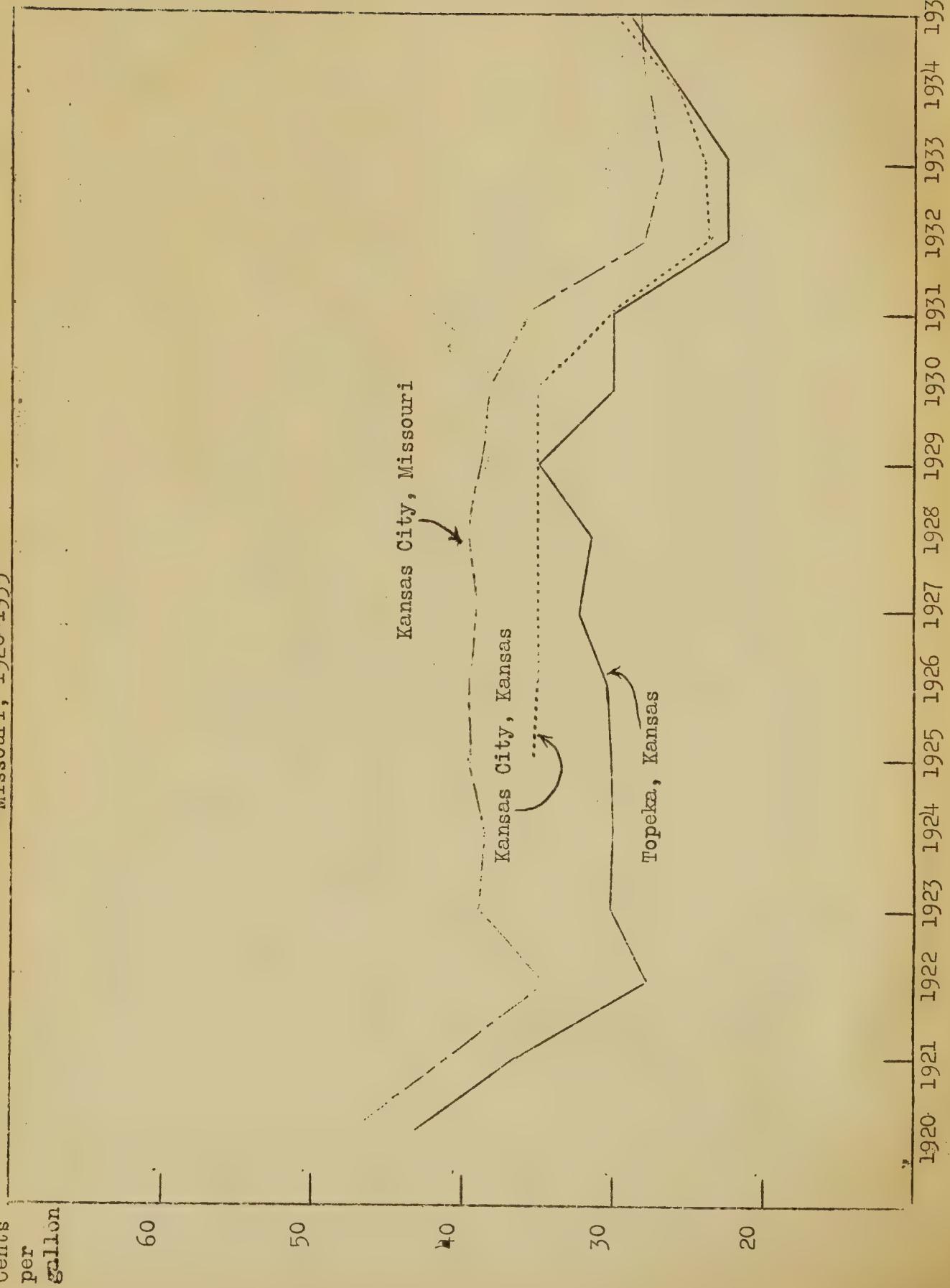


Table 6: Monthly receipts of milk in Kansas City, Missouri from all states and from Kansas and the percentage of total receipts from Kansas.

Year and Month	Milk Receipts		Percentage of total receipts from Kansas
	Total <u>1,000 Pounds</u>	From Kansas <u>1,000 Pounds</u>	
<u>1934</u>			<u>Percent</u>
April	12,379	3,220	26.01
May	13,281	3,419	25.74
June	12,558	3,274	26.07
July	12,375	3,235	26.14
August	11,499	3,150	27.39
September	11,143	3,196	28.68
October	11,623	3,251	27.97
November	11,272	3,240	28.74
December	10,463	3,078	29.42
Total (9 Months)	106,593	28,963	27.17
<u>1935</u>			
January	10,529	3,167	30.08
February	10,108	3,046	30.13
March	11,318	3,234	28.57
April	12,173	3,349	27.51
May	12,952	3,776	29.15
June	11,664	3,327	28.52
July	11,407	3,129	27.43
August	11,650	3,152	27.06
September	10,993	2,985	27.15
October	10,209	2,871	28.12
November	9,652	2,770	28.70
December	10,170	2,916	28.67
Total	132,825	37,702	28.38

Compiled from reports of the Bureau of Agricultural Economics
Division of Dairy and Poultry Products.

Table 7. Annual receipts of cream at Chicago, New York
and Boston from Kansas, 1929 - 1935.

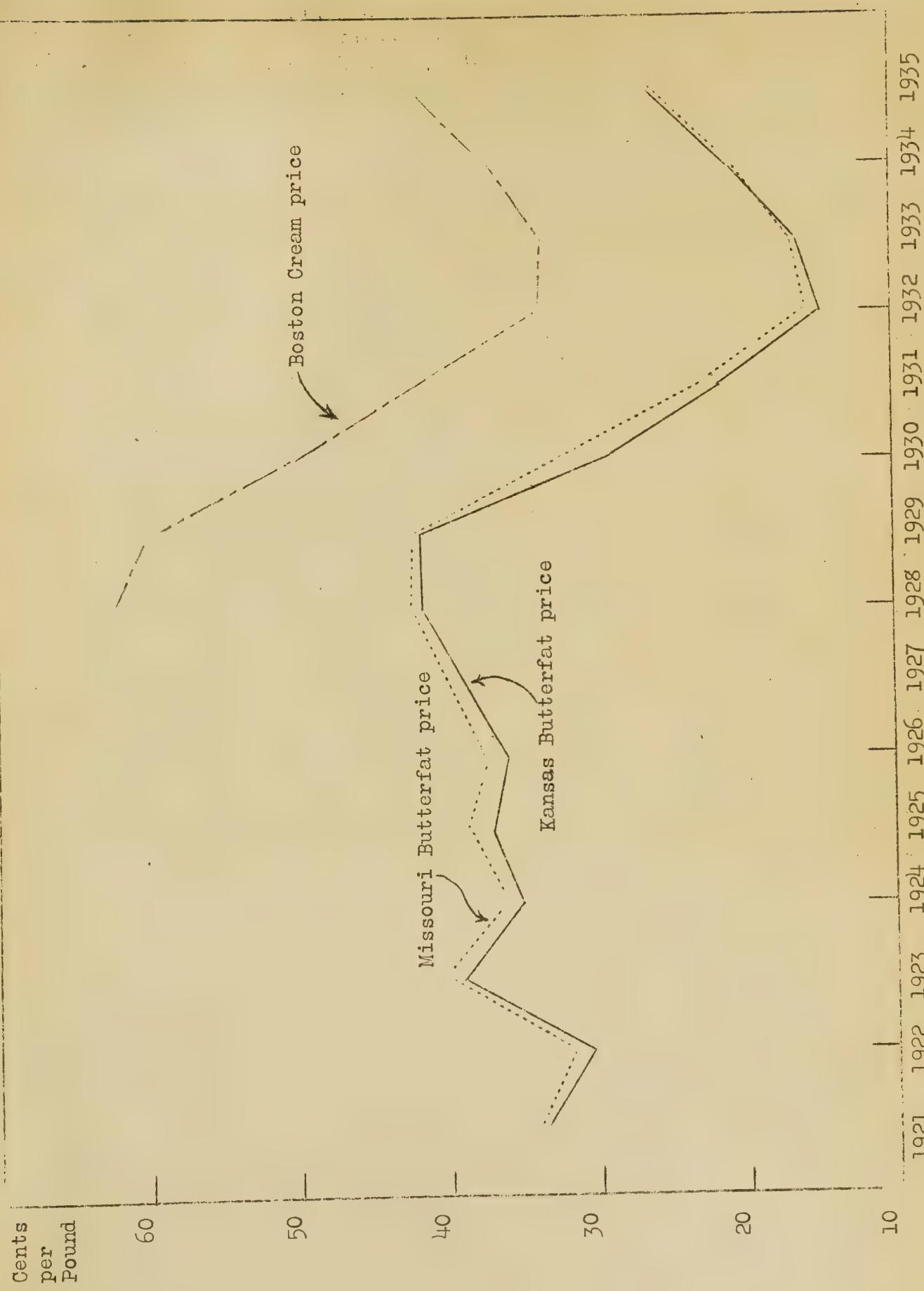
Year	Chicago	New York	Boston	Philadelphia	Total
	<u>Pounds</u>	<u>Pounds</u>	<u>Pounds</u>	<u>Pounds</u>	<u>Pounds</u>
1929	--	19,800	--	66,000	85,800
1930	--	--	46,200	41,844	88,044
1931	12,837	--	82,335	--	95,172
1932	11,253	--	170,445	--	181,698
1933	4,026	--	263,175	--	267,201
1934	5,379	--	66,000	--	71,379
1935	--	--	26,400	--	26,400

Compiled from reports of the Bureau of Agricultural Economics, Division of Dairy and Poultry Products.

Figure 5: Prices received by farmers in Kansas and Missouri for butterfat sold, and price per pound of fat in cream sold wholesale in Boston.

1921-1935

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from Topeka to out-of-state markets is not available, the interstate character of this movement is indicated by the receipts of butter and cheese at 6 principal markets in the United States, from Kansas, (See table 8). The movement of farm butterfat prices in the Topeka, producing area, and prices of butter in the Kansas City and Chicago markets indicates clearly their close inter-relationship. (See Figure 6)

The preceding analysis indicates a close relationship between fluid milk, cream, and butter prices on the Topeka, Kansas, Kansas City, Missouri and other out-of-state markets, maintained by direct movements of supplies. The interstate character of the commerce in butter is more apparent than for sweet cream, and more apparent for the latter than for fluid milk. Receipts of fluid milk at Topeka, do not as a general rule cross a state line. Nevertheless the level and structure of fluid milk prices on the Topeka market does more or less directly affect the price structure on the Kansas City, Missouri and other out-of-state markets. In fact, it is generally recognized that prices in one of these markets cannot be maintained for any appreciable length of time, out-of-line with those of the others.

The structure of prices for dairy products on the Topeka market is also closely related to that on out-of-state markets because of the inter-relationship between prices of fluid milk, cream, butter and other dairy products. Fluid milk delivered to Topeka, but not consumed as fluid milk is customarily separated into cream and skim milk. Some of the cream is sold on the Topeka market while the rest is shipped out to other markets or manufactured into butter, cheese or some other dairy product. The prices that dealers in Topeka pay for fluid milk is determined not only by the retail price of fluid milk but also by the price of cream and butter. And the price of butter in Topeka is closely linked to the price of butter in outside markets. (See Figure 6). Furthermore, these prices are linked together because of their relation to production. When the price of fluid milk declines to a point where it is not sufficiently high to cover the additional costs of producing milk for fluid consumption, some producers shift from the production of milk for consumption as fluid milk to the production of milk for use in the manufacture of dairy products.

Table 8: Receipts of butter and cheese at the
6 principal markets from Kansas, 1927--1935.

Butter

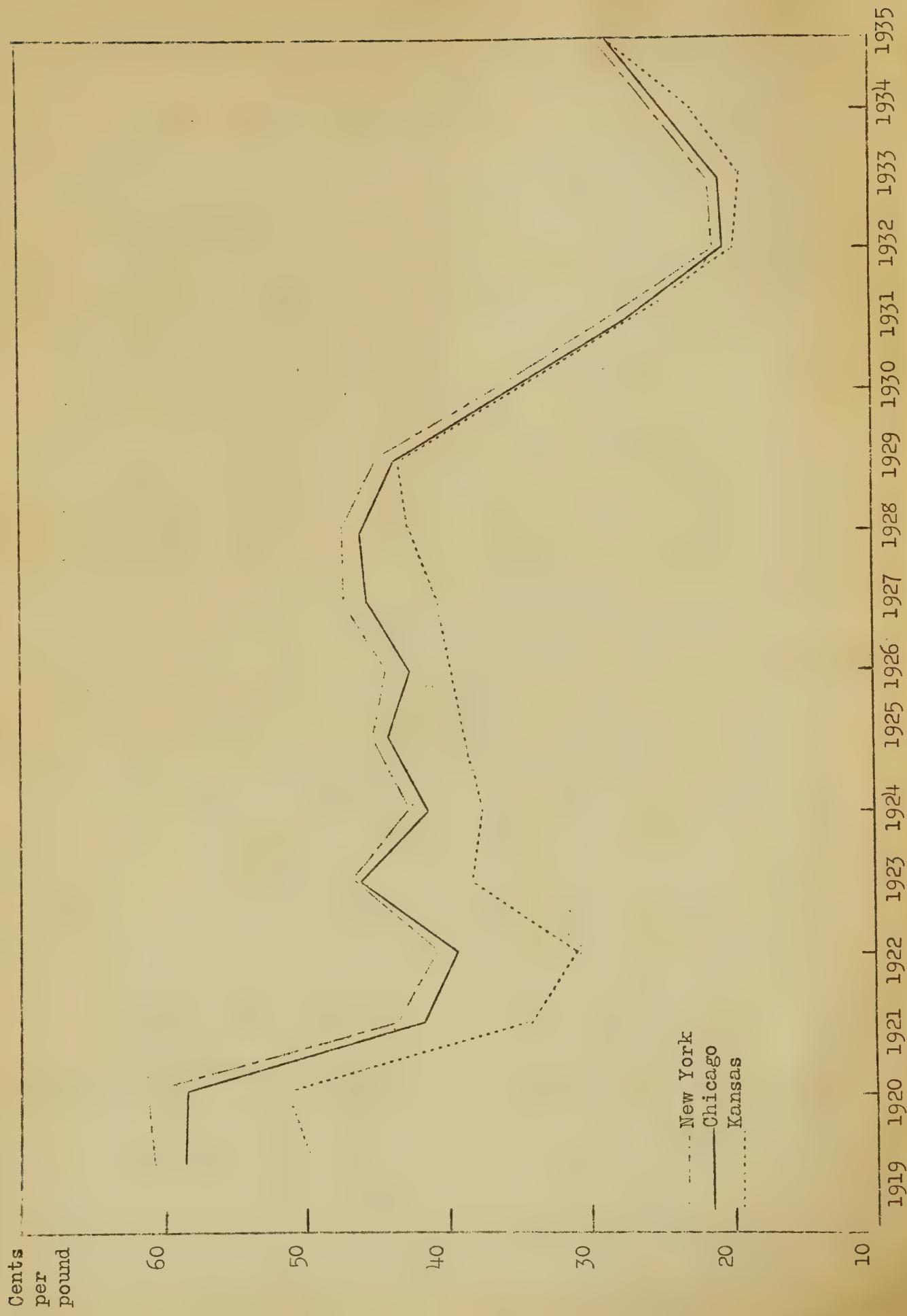
Year	New York	Chicago	Philadelphia	Boston	San Francisco	Los Angeles
	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
1927	3,807,847	9,989,078	369,549	1,532,093		
1928	4,797,457	12,981,251	384,332	1,801,334		
1929	6,520,436	11,184,978	134,483	1,268,357	24,120	
1930	7,511,634	9,927,773	70,447	795,946		
1931	7,136,051	15,283,149	387,362	587,120		
1932	12,065,689	20,270,603	729,392	518,424	22,995	
1933	15,582,304	25,953,696	303,130	801,640	24,872	53,419
1934	10,394,059	20,750,724	411,695	1,829,520	284,017	349,771
1935	7,291,268	16,323,214	628,980	1,675,309	1,897,942	903,958

Cheese

	New York	Chicago	Philadelphia	Boston	San Francisco	Los Angeles
	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
1927	168,428	26,306				
1928	47,640	35,580				
1929	34,442	35,435	1,095			
1930		39,369			28,531	
1931		26,631			360	
1932	400	4,152				
1933	65,481	39,952				
1934		9,797				
1935	14	305				50,950

Compiled from reports of the Bureau of Agricultural Economics, Market News service.

Figure 6: Wholesale prices of $\frac{1}{2}$ score creamery butter in New York and Chicago
and the prices received by farmers in Kansas for butter
1920-1935



Part V

The Price Structure Provided by the
Proposed Agreement.

A general discussion of the price structure for milk is set forth in Technical Paper No. 1 published by the Dairy Section of the Agricultural Adjustment Administration. ^{7/}

In this paper it is shown that the classified price plan of selling milk to distributors develops from the competition among distributors to secure an even supply of milk, or rather, a supply of milk that is closely related to such distributors' requirements for milk for their fluid milk trade. This paper also shows how differences in (1) costs of transporting a unit of milk in fluid form and the product equivalent of a unit of fluid milk, and (2) varying sanitation regulations applicable to milk produced for fluid use and milk produced for use in manufactured dairy products, affect the differential between the price of milk used for different purposes.

1. Use Classification.

Classification of milk according to use for the purpose of pricing is a well-established practice in the important fluid milk markets of the United States. The reasons for classifying milk according to use are set forth in the Technical Paper No. 1 referred to above. Under the License which became effective on November 10, 1934 the following three classes of milk were established: Class I - all milk sold or distributed by distributors as whole milk; Class II - all milk used by distributors to produce cream for sale in the Topeka salos area; Class III - all milk purchased, sold, used or distributed by distributors in excess of Class I and Class II milk. Experience in operating under this license, however, demonstrated that only two classes were necessary. By an amended license effective July 16, 1935 Classes I and II were combined.

The use classification provided by the Proposed Marketing Agreement follows:

Class I. All milk sold or distributed as milk, chocolate milk, flavored milk drinks, cream (for consumption as cream), creamed cottage cheese, and creamed buttermilk and all milk not specifically reported so as to be classified in Class II.

Class II. Milk specifically accounted for (a) as being sold, distributed or disposed of in other forms than those named in Class I, and (b) as actual plant shrinkage within reasonable limits shall be Class II milk.

^{7/} E. W. Gaumnitz and O. M. Reed, The Price Structure for Milk, Technical paper No. 1, Dairy Section, Agricultural Adjustment Administration, U. S. Dept. of Agriculture. (Appendix B).

The inclusions of cream, chocolate milk, flavored milk, creamed cottage cheese and creamed butter as Class I milk is prompted by the fact that such products are, properly speaking, fluid milk products in the Topeka area, in that milk of the same quality as milk used for fluid milk consumption is necessary for their manufacture, and the milk used in their manufacture is transported to Topeka as fluid milk.

During the last five months of 1935 the proportion of Class I milk to the total amount of milk pooled varied from a low point of 80.9 percent in August to a high of 98.7 percent in November. During the remainder of the year, Class I and II milk combined represented from 60.7 percent to 83.4 percent of the milk receipts pooled. (See Table 9).

2. Minimum prices to producers provided by the Proposed Marketing Agreement.

The minimum price for Class I milk, according to the terms of the Proposed Marketing Agreement, is 49.25 cents per pound butterfat in such milk delivered to handlers' plants within the marketing area. The Class II prices per pound of butterfat in milk delivered to handlers' plants is determined, for each delivery period, by adding 5 cents to the average price per pound of 92 score butter at wholesale in the Chicago market, as reported by the United States Department of Agriculture.

A. Price history of the Topeka market.

1. Farm prices of butterfat. The average annual farm price of butterfat per pound in Kansas was relatively stable from 1923 to 1929 varying from a low of 35.2 cents in 1924 to a high of 41.8 cents in 1929. Prices then declined sharply to a low of 14.6 cents per pound in 1932 - a drop of 65 percent. Since 1932, these prices have increased somewhat, but are still materially below the 1929 levels.

2. Milk dealers' average buying prices of milk received in Topeka, Kansas.

Table 10 shows the average price per pound of butterfat paid by dealers for Class I, II and III entered in the pool, while operating under license No. 92, from November, 1934 to December, 1935, the only period for which prices of each class of milk are available.

From November 1934 to May 1935 the price of Class I milk was maintained at 60 cents per pound of butterfat and the price of Class II milk fluctuated around 50 cents per pound. In June 1935, Class II was combined with Class I and a minimum price of 50 cents per pound of butterfat established for it, which is still in effect. The level of Class III prices (called Class II since June, 1935) on the other hand, has been somewhat higher during the winter of 1935-36 than in the preceding year. These price changes have resulted in a weighted

Table 9. TOPEKA, KANSAS: Class I, II, III and Total Sales of Butterfat and Percent each Class is of Total Sales, by months, November, 1934 - February, 1936.

Month	Class I		Class II		Class III		Total
	Sales	% of Total	Sales	% of Total	Sales	% of Total	
	Pounds	Percent	Pounds	Percent	Pounds	Percent	Pounds
1934							
November	18,674	55.3	6,716	19.9	8,354	24.8	33,744
December	24,997	57.4	9,804	22.5	8,752	20.1	43,553
1935							
January	25,859	57.0	9,910	21.8	9,618	21.2	45,387
February	24,674	60.5	9,347	22.9	6,746	16.6	40,767
March	27,059	60.4	9,652	21.6	8,079	18.0	44,790
April	25,170	53.4	8,832	18.8	13,102	27.8	47,104
May	24,270	43.5	9,591	17.2	21,928	39.3	55,789
June	33,576	64.2	4061	8.8	18,329	35.0	52,311
July	34,861	76.4	3293	7.7	10,434	22.9	45,624
August	35,411	80.9	3177	7.7	8,373	19.1	43,784
September	35,782	88.1	1,777	7.7	4,815	11.9	40,597
October	37,208	95.9	1,777	7.7	1,607	4.1	38,815
November	35,997	98.7	1,777	7.7	476	1.3	36,473
December	37,142	88.4	1,777	7.7	4,857	11.6	41,999
1936							
January	37,481	84.4	1,777	7.7	6,937	15.6	44,418
February	34,889	81.0	1,777	7.7	8,143	19.0	43,032

Compiled from semi-monthly reports of the Market Administrator.

1/ June 14 - All cream for fluid consumption included in Class I Milk.

2/ July 16 - All milk used to produce flavored milk, creamed cottage cheese and creamed buttermilk included in Class I Milk.

average price for all milk pooled about 10 percent lower during January and February 1936 than in the same months of 1935.

B. Demand conditions in Topeka, Kansas.

(1) Business conditions - purchasing power of consumers.

There was an improvement in business conditions in Topeka in 1935 over 1934. Total check payments in 1935 amounted to \$179,299,000 compared with only \$168,449,000 in the preceding year - an increase of 6.4 percent. Building permits issued in Topeka also increased from 435 to 632. The estimated cost of these buildings was \$971,696 in 1934 and \$1,572,230 in 1935, an increase of over 60 percent. Retail trade at department stores in Kansas City, the nearest city for which such data are reported by the Federal Reserve Bank of Kansas City, was 9.4 percent higher in December 1935 and 10.7 percent higher for the year 1935 than in 1934. ^{8/} This improvement has continued thus far in 1936.

(2) The trend of milk consumption in the Topeka Sales Area.

The consumption of Class I milk, reported to the Market Administrator, averaged about 15 percent larger during November and December 1935 and January 1936 than the consumption of Class I and Class II milk during the preceding year. (See Table 10) The period for which data are available, however, is too short to determine any trend in consumption. Besides, not all of the milk consumed in this area as fluid milk and cream is reported to the Market Administrator. Reliable data on the total consumption of milk in this market each month since November 1934 are not available.

(3) Seasonal variations in Sales of fluid milk in Topeka, Kansas.

Sales of milk as fluid milk and cream in the Topeka market from the milk pooled during 1935, the only year for which data are available, ranged from 93.8 percent of the average monthly sales in May to 104.3 percent in February. In general, sales of fluid milk and cream are fairly constant throughout the year. (See Table 11) There is usually, however, a decrease in sales during the summer, caused by departure of people on vacations, and some increase when the legislature is in session.

As will be shown later, the seasonal variations in milk production in the area supplying milk to the Topeka market is much more marked than the seasonal variation in sales of fluid milk and cream. Furthermore the peak production tends to occur when the consumption of fluid milk and cream is lowest. This being the case, the analysis set

^{8/} Sources: Monthly Review, Federal Reserve Bank of Kansas City.
February 1, 1936.

Table 10. TOPEKA, KANSAS: Price per pound butterfat of Class I, II and III milk and weighted average price, by months, November, 1934 to February, 1936.

Year and month	Class I	Class II	Class III ^{1/}	Weighted average price
	Cents	Cents	Cents	Cents
<u>1934</u>				
November	60.0	45.0	34.1	50.4
December	60.0	45.5	34.5	51.6
<u>1935</u>				
January	60.0	49.0	37.5	52.8
February	60.0	52.0	40.0	54.9
March	60.0	46.6	35.6	52.7
April	60.0	49.2	37.8	51.8
May	60.0	41.2	30.7	45.3
June	50.0	38.2	28.5	42.4
July	50.0	38.0 ^{2/}	28.5	45.0
August	50.0	-	29.5	46.1
September	50.0	-	30.5	48.1
October	50.0	-	32.0	49.2
November	50.0	-	45.0	49.9
December	50.0	-	38.0	48.6
<u>1936</u>				
January	50.0	-	39.0	48.3
February	50.0	-	40.5	48.2

Compiled from semi-monthly reports of the Market Administrator.

1/ Called Class II after June 1935.

2/ July 1-15 only.

Table 11:- Seasonal variation in daily sales of Class I, Class II and total butterfat in Topeka; Kansas.

Year and month	Class I 1/		Class II 2/		Total Pounds	Percent 1935 Monthly Average	Percent of 1935 Monthly Average	Percent of 1935 Monthly Average
	Pounds	Percent of 1935 Monthly Average	Pounds	Percent 1935 Monthly Average				
<u>1934</u>								
November	1,209	103.8	398	134.2	1,607	109.9	100.2	1/ Includes sales of Class II butterfat from November, 1934 to July, 1935 as reported by Market Administrator.
December	1,123	96.4	282	95.1	1,405	96.1	99.6	
<u>1935</u>								
January	1,154	99.1	310	104.5	1,464	100.2	100.2	
February	1,215	104.3	241	81.2	1,456	99.6	99.6	
March	1,184	101.6	261	88.0	1,445	98.9	98.9	
April	1,133	97.3	437	147.3	1,570	107.4	107.4	
May	1,092	93.8	708	238.7	1,800	123.2	123.2	
June	1,133	97.3	611	206.0	1,744	119.2	119.2	
July	1,135	97.4	337	113.6	1,472	100.7	100.7	
August	1,142	98.0	270	91.0	1,412	96.6	96.6	
September	1,193	102.4	160	53.9	1,353	92.6	92.6	
October	1,200	103.0	52	17.5	1,252	85.7	85.7	
November	1,200	103.0	16	5.4	1,216	83.2	83.2	
December	1,195	102.6	157	52.9	1,355	92.7	92.7	
<u>1936</u>								
January	1,209	103.8	224	75.5	1,433	98.0	98.0	
February	1,203	103.3	281	94.7	1,484	101.5	101.5	
Σ/ Same as Class III shown in Table 10.								

Table 12:- Use of land in farms in the Topeka Milk Supply Area, 1929 and 1934.

State and County	Percent land in farms is of total land	Percent of land in farms in specified crops						Percent Percent Percent Percent Percent Percent Percent Percent	
		All pasture		All crops		Threshed Oats			
		1929	1934	1929	1934	1929	1934		
<u>Kansas</u>									
Shawnee	90.8	91.0	37.9	40.9	56.6	53.7	26.3	17.6	
Douglas	91.8	94.9	40.6	39.9	51.1	53.8	20.9	17.6	
Jefferson	96.0	97.2	34.6	37.8	58.3	54.5	26.2	20.1	
Jackson	91.4	95.5	33.3	40.1	61.3	53.8	34.1	22.1	
Pottawatomie	93.9	95.0	50.2	52.4	43.5	41.1	22.9	12.1	
Wabaunsee	88.4	99.9	60.1	63.5	35.2	31.5	16.3	11.1	
The State	89.8	91.7	39.8	37.4	56.5	58.1	14.1	6.3	

forth in Technical Paper No. 1 referred to above (see page 57) is of special significance in explaining the price structure for milk in a market such as Topeka and pointing out the economic basis for the price structure that is set forth in the Proposed Marketing Agreement.

C. Supply conditions.

(1) Location and boundaries of the Topeka Milk Supply Area.

Figure 2 shows the area within which most of the producers who send their milk to the Topeka market area are located. Nearly all of the fluid milk sold in this market is produced within 20 miles of the city and most of it within 15 miles. This milk shed overlaps that of Lawrence, Kansas and to some extent Kansas City, Kansas on the east. Fluid milk is produced for sale throughout most of the farming areas between Topeka and Kansas City. This milk flows to the different markets in the area - Kansas City, Kansas, Kansas City, Mo., Lawrence, Topeka, Leavenworth and others in response to price relationships between the different markets.

About 90 percent of Topeka's fluid milk receipts by distributors are brought in each day by trucks that are privately owned and operated, according to estimates of the Market Administrator. Milk is hauled to the distributor plants in Topeka from an average distance of about 9 miles by these trucks. The extremities of the average route is 15 miles. The universal hauling charge is 20 cents per hundredweight regardless of distance from Topeka. Producer-distributors, of course, haul their own milk. They are located close to the market.

The area from which Topeka draws cream for the making of butter and other manufactured dairy products extends far beyond the boundaries of the fluid milk shed. Such cream is shipped to Topeka from cream stations, etc. scattered throughout a territory of approximately 75 to 100 mile radius. Topeka is, in fact, a center for the manufacture of sour cream, from this area, into butter. There are several large creameries in the city.

(2) Type of Farming.

In general, Topeka, obtains its fluid milk supply from three counties - Shawnee, the county in which Topeka is located, and two counties, Douglas and Jefferson bordering Shawnee on the east. In these counties farming as a whole is of the general type. Corn is the predominant grain crop and alfalfa is the chief hay crop. In 1934, a little more than half of the farm land was in crops, nearly 20 percent was in corn and about 12 percent was in hay crops. (See Table 12) Wheat and potatoes are supplementary crops. Most of the farmers feed their corn and alfalfa to livestock on the farm.

In 1929, 12.7 percent of the farms in Shawnee county received 40 percent or more of their farm income from the sale of dairy products (hereafter called dairy type farms), according to the 1930 United States Census. In Douglas and Jefferson county the percentage of dairy type farms was 10.9 and 6.9 respectively. (See Table 13) The average number of milk cows in the dairy type farms in each of these three counties ranged from 9.7 to 13.5 per farm. Most of these cows were of dairy breeds. On other farms in each of these counties the average number of milk cows per farm ranged from 5.0 to 6.2 and about a fourth of them were of dual purpose and beef breeding. In all three counties, milk cows constituted about 30 percent of the total number of all cattle.

In the remaining counties between Topeka, Kansas and Kansas City, dairying is somewhat more important than in the three counties mentioned above. In other nearby counties, however, dairying is considerably less important.

Milk production on many of the farms in all of these counties can probably be increased or decreased 10 percent or more with little difficulty. When milk prices become high in relation to feed prices or the prices of other livestock products farmers tend to increase their production of milk by heavier feeding, increasing the number of cows milked, and reducing other farm enterprises. The routes of trucks hauling milk to Topeka can also be extended so as to bring in milk from farms, formerly selling it in the form of cream for the manufacture of butter and other manufactured products. When milk prices decline this process can be reversed. Other farm enterprises compete with dairying on most of the farms producing fluid milk for the Topeka market. The production of hogs, beef cattle, and poultry are important alternative markets for the large quantities of feed grown in this area. Consequently, a decline in the price of milk and cream can be expected to cause farmers in this area to decrease their production of milk rather quickly and increase that of other products. Nevertheless, there are certain limitations to such expansion or contraction. Changes in farm organizations usually take place gradually. Farms producing whole milk for the Topeka market must meet certain health requirements, which involve considerable cash expense. Besides most of the farms are equipped for the existing type of farming and changes usually involve other extra cash expenses.

(3) Disposition of Milk Produced.

According to the United States Census, the disposition in 1929 of milk produced on dairy type farms and other farms in the three counties from which Topeka draws its milk supply as reported by the United States Bureau of the Census, is shown in Table 14.

The total amount of whole milk sold from all farms and from dairy type farms in these counties in 1929 was greatly in excess of the amount

Table 13:- Type and size of farm, size of herd and type of milk cows kept on farms in the Topeka Milk Supply Area, in 1929.

State and County	Percent of farms of dairy type farm	Size of dairy type farms	Number of milk cows		Percent milk cows of dual purpose and beef breeding		Percent milk purpose and beef breeding cows are of all cows milked all cattle On all farms Dairy farms
			Per farm reporting	Per dairy type farm milk cows	Percent	Percent	
Kansas	Percent	Acres	Number	Number	Percent	Percent	Percent
Shawnee	12.7	145	148	6.2	13.5	31.7	7.4
Douglas	10.9	149	139	5.9	12.1	33.9	18.5
Jefferson	6.9	154	154	5.0	9.7	28.2	24.1
Jackson	2.6	161	123	4.7	8.9	27.0	22.7
Pottawatomie	1.4	233	156	4.5	11.5	1.4	57.1
Wabaunsee	2.0	276	143	4.7	11.3	12.8	36.4
The State	4.0	283	149	5.1	11.1	22.5	36.6
							16.7

Compiled from the United States Census of Agriculture for 1930. (Volume II, Part I and Volume III
Part I)

Table 14. Disposition of milk produced on farms in the Topeka Supply Area, 1929. 1/

Classification	Dairy type farms 2/	Other farms	Total
	Million Pounds	Million Pounds	Million Pounds
Total production	40.9	87.1	128.0
Whole milk sold	32.9	18.9	51.8
Farm butter sold (milk equivalent)	3/	3/	1.2
Cream sold (milk equivalent)	3/	3/	2.2
Cream sold as butterfat, (milk equivalent)	4.3	38.6	42.9
Milk used on farms	3/	3/	29.9

1/ Data are for Shawnee, Douglas, and Jefferson Counties of Kansas, as reported in the Fifteenth Census of United States, United States Department of Commerce, Bureau of Census, Volumes II and III.

2/ Farms obtaining 40 percent or more of their income from the sale of dairy products.

3/ Not reported.

of whole milk received in Topeka during 1935. The market administrator reported that whole milk containing 533,440 pounds of butterfat was received by handlers in Topeka from producers during 1935. During the last seven months of 1935 the Administrator estimated that these receipts constituted 65 percent of the total receipts in this market. Assuming that handlers reporting their purchases from producers received 65 percent of the total receipts during the entire year, it is estimated that about 816,000 pounds of butterfat were received on this market during 1935. This amount of butterfat is equivalent to 22.1 million pounds of milk testing 3.7 percent butterfat (the usual test of milk produced in this area), or about 40 percent of the whole milk sold from all farms in these three counties in 1929 and about 60 percent of that sold from dairy type farms.

In Shawnee county alone 25.3 million pounds of whole milk was sold from all farms and 18.4 million pounds from dairy type farms in 1929. In addition, 14.6 million pounds of milk was disposed of as cream sold on a butterfat basis.

With the exception of the three counties close to Kansas City, most of the farmers in other counties near to Topeka, dispose of only a small proportion of their milk as whole milk. Most of it is separated and the cream sold on a butterfat basis for making butter and other manufactured products.

(4) Sanitation requirements.

Milk sold in the Topeka market for consumption as fluid milk or as cream is subject to certain health regulations conforming closely to the recommendations of the United States Public Health Service. The premises of all producers sending whole milk to Topeka are inspected at least once a month. The physical conditions that must be met are: tuberculin tested cows, sanitary toilets, safe water supply, correct amount of lighting, air space, and ventilation, small top milk pails, proper disinfection, proper storage of utensils, a dairy barn with cement floor, and a separate milk house with cement floor. The dairy barn must be cleaned once a day and the manure piles must be at least 50 feet away.

Four grades of milk, A, B, C and D, have been established by the Topeka Health regulation. The first three grades require compliance with the same physical conditions on the farm. Practically the only difference between them is in bacteria count. Raw milk of Grade A must not have more than 50,000 bacteria per cubic centimeter, Grade B must have less than 200,000 and Grade C less than 1,000,000 bacteria per cubic centimeter. All of this milk can be increased to Grade A by pasteurization, if the bacteria count is reduced to less than 25,000. Grade D is milk that does not meet any of the above health requirements of the city. It must be

labeled as "Grade D Raw Milk for Cooking only." There were only 13 dairies producing Grade D milk for sale in Topeka in June, 1934.

These requirements increase, to a considerable extent, the amount of labor required to operate a dairy farm. Producers testifying at the hearing in Topeka, on June 20, 1934 claimed that the production of Grade A milk required about 50 percent more labor than the production of Grade D milk for which there are no sanitation requirements. They also claimed that the capital investment necessary to equip a farm for producing Grade A milk is \$100 to \$400 greater than for the production of Grade D milk, and that extra cash expenses, for inspection and additional material, ranges from \$3.00 to \$5.00 per month for a 12 cow dairy.

These health regulations increase the cost of producing Grade A,B, and C. milk over that of producing Grade D milk, or of milk from which cream is separated and sold for manufacturing purposes.

(5) Seasonal Surplus - Relation to Problem.

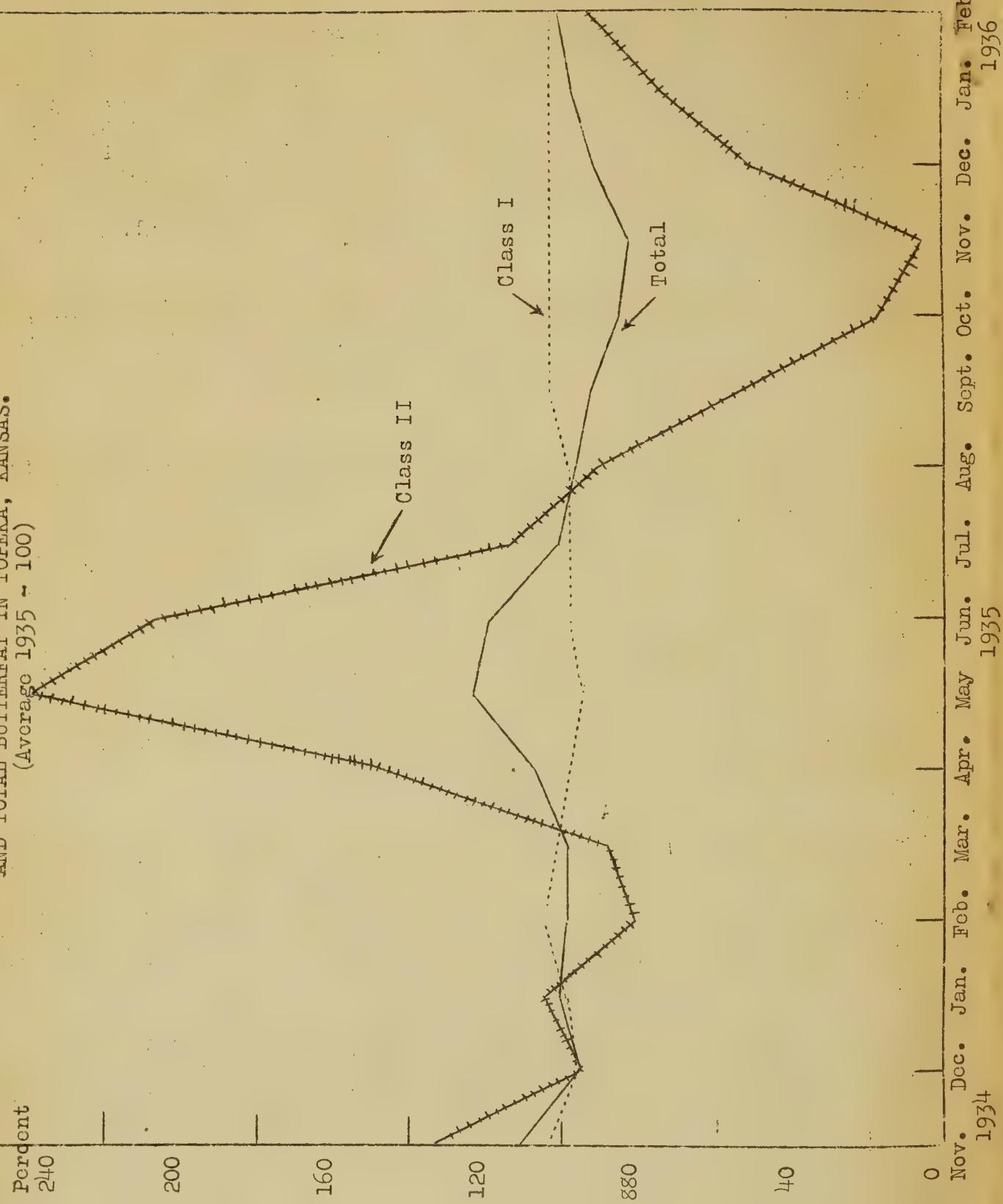
Seasonal fluctuations in the production of milk in the Topeka supply area are considerably greater than the fluctuations in consumption of milk in Class I as shown by Table 11, Figure 7. During the summer months the supply of milk on the Topeka market greatly exceeds the demand of consumers for milk and cream. The surplus is used in the manufacture of various products, such as butter, ice cream, etc. During the winter months of 1935 the supply of milk delivered by producers to handlers, as reported to the market administrator, was only a little more than the amount sold as fluid milk and cream by these handlers. Under such conditions the price of milk might fluctuate widely throughout the year if no attempt were made to control the market. During the winter months milk prices would tend to be based upon the demand for milk for consumption as fluid milk or cream, while during the summer months they would tend to be based on the demand for milk in manufacturing butter and ice cream.

The Proposed Marketing Agreement, however, provides that producers be paid for milk according to the use made of it. That sold as fluid milk and cream is to be paid for at one price and that disposed of as butter and ice cream at another price. Furthermore, a minimum price is established for all milk sold as fluid milk or cream (Class I). By this arrangement it is expected that some of the decline in prices resulting from a supply of milk in excess of Class I demand can be prevented.

(6) The Organization of the Milk Supply for the Topeka Market.

Approximately two-thirds of the producers shipping milk to the Topeka market are members of the Shawnee County Milk Producers' Association. This

FIGURE 7: SEASONAL VARIATION IN DAILY SALES OF CLASS I, CLASS II,
AND TOTAL BUTTERFAT IN TOPEKA, KANSAS.
(Average 1935 = 100)



association was organized on May 2, 1934, and is the only cooperative association of milk producers in the market. During the period November 1934 to December, 1935 inclusive, the average number of members of this association shipping milk to Topeka was 130, and the average number of non-members was 53. Of the total amount of milk purchased by handlers reporting to the Topeka Milk Market Administrator during this period, 74 percent was from members of the producers' association.

(7) Relation of supply to the margin between Butterfat prices of Class I, Class II, and sour cream.

There is nothing in the proposed marketing agreement to prevent producers from increasing their production of milk and selling it on the Topeka market. Nor is any attempt made in the proposed marketing agreement to keep new producers out of this market. Consequently, if the price of whole milk is established at too high a level the volume of milk coming into this market can be expected to increase, due to increased production and to a shift in the disposition of milk on farms from the sale of cream for the manufacture of butter and other products, to the sale of whole milk on the Topeka market. Furthermore, a considerable number of dairy farmers deliver their own milk to consumers in Topeka, and the number would tend to increase if the prices established are too low in relation to retail prices. Competitive forces in this market can therefore be expected to keep prices closely in line with demand and supply conditions. The proposed marketing agreement is expected to facilitate the working of these competitive forces.

(8) Current production conditions of importance in relation to the proposed schedule of Minimum Prices to Producers.

Milk production as indicated by total sales of all milk reported to the market administrator by handlers purchasing from farmers during November and December, 1935 and January, 1936 amounted to 122,890 pounds of butterfat compared with 122,684 pounds in the same months of the preceding year.

Feed prices during the winter of 1935-36 have been considerably lower than in the preceding year, as shown by table 15. Average prices received by farmers in Kansas for alfalfa hay declined from \$19.70 per ton in January, 1935 to \$8.60 in January, 1936. Prices of corn declined from \$1.02 to \$.65 per bushel during the same period. Cottonseed meal and bran have also been lower. Wages of farm labor, however, have been higher.

(9) Alternative Markets and Prices paid therein in Relation to Prices provided by the proposed agreement.

The principal market for milk in excess of the fluid milk and cream demand, is in the manufacture of butter and ice cream. The price of Class II milk established by the proposed agreement, as explained on page 37 corresponds closely to the value of the skim milk and the value of the butterfat

Table 15. Average January prices of feed in Kansas, 1922-1936.

Year	Alfalfa hay per ton	Corn per bushel	Bran 1/ per ton	Cottonseed meal, 43% 1/ per ton
	Dollars	Cents	Dollars	Dollars
1922	10.10	36		
1923	11.30	64		
1924	13.50	65		
1925	14.10	107		
1926	13.80	67		
1927	16.00	70	28.85	34.10
1928	10.30	65	30.40	49.90
1929	12.20	69	29.65	50.65
1930	13.00	69	25.45	45.05
1931	12.40	52	15.05	33.20
1932	8.00	29	10.00	20.95
1933	5.70	16	7.25	18.10
1934	7.50	38	13.95	29.30
1935	19.70	102	26.20	42.70
1936	8.60	65	16.56	28.98

Compiled from reports of the Bureau of Agricultural Economics,
Division of Crop and Livestock Estimates.

1/ Prices at Kansas City.

for the manufacturing of butter.

During the latter half of 1935 the price of Class I milk was maintained at from 5 to 21 cents per pound butterfat above the price of Class II milk, as shown by Table 10 on page 25 of this brief.

(10) Conclusions relative to minimum prices to producers.

a. The Class I price.

The Class I price provided by the proposed agreement is approximately the same as that in effect under License No. 92 since June, 1935. Consumer purchasing power appears to be on an upward trend. There was also some increase in sales of fluid milk and cream from November, 1935 to January, 1936 inclusive, as compared with the same months a year ago, as reported by the market administrator. Some of this increase, however, may have been due to an increase in the proportion of the total amount of milk coming to this market that is reported by the market administrator.

Feed prices in Kansas are much more favorable to the production of milk now than they were a year ago. But the prices of other livestock products are also more favorable. On December 15, 1935, the average farm price of hogs in Kansas was \$8.70 per hundredweight compared with only \$5.10 on December 15, 1934. ^{9/} Beef cattle prices during the same period increased from \$4.30 to \$6.80 per hundredweight. The alternative market for feed produced in the Topeka milk supply area is consequently better now than a year ago. The total amount of milk received, as reported to the Market Administrator, was practically the same from November, 1935 to January, 1936, inclusive, as a year earlier.

b. The Class II price.

The principal use of surplus milk not sold as Class I is in the manufacture of butter, ice cream, and other products. The price paid for Class II milk must, therefore, conform closely to the value of it for such uses. The proposed agreement states that each handler signing it shall pay producers in the manner set forth in article VIII for each pound of butterfat contained in Class II milk, not less than the average price per pound of 92 score butter at wholesale in the Chicago market, as reported by the United States Department of Agriculture for the delivery period during which such milk is delivered, plus, 5 cents per pound. This price is based upon the expected value of the butterfat from Class II milk for the manufacture of butter plus the value of the skim milk for sale as skim milk or for manufacturing purposes. The "over run" in the manufacture of butter from cream, per pound of butterfat, is expected to pay the cost of manufacturing butter, plus the cost of shipping butter to the Chicago market. Topeka is a surplus butter producing area. The carlot rate on buttershipped to Chicago is 0.5 cents per pound. Milk handlers may also be unable to make all 92 score butter from butterfat in

Class II milk.

On the basis of the foregoing facts and considerations, it appears that the schedule of prices specified in the proposed marketing agreement are proper and justifiable.

PART VI

Other Provisions of the Proposed Marketing Agreement.

The remaining provisions of the Proposed Marketing Agreement are necessary for the purpose of making effective the classification and price provisions previously discussed.

A. The Topeka Marketing Area. The marketing area, as defined in the agreement, includes the territory within the corporate limits of the city of Topeka, and certain outlying territory within which milk is regularly distributed by handlers located within the corporate limits. A number of stands are also located in this outlying territory at which milk purchased from producers is sold at retail. This outlying territory forms a contiguous and natural part of the Topeka marketing area and any attempt to regulate the marketing of milk in Topeka that did not include it would have to operate under a serious handicap.

B. Other definitions. "Person" means any individual partnership, corporation, association, or any other business unit. In the milk industry, practically all types of business organization are to be found. Hence, in order that all handlers subject to regulation in a milk market be regulated, it is necessary that all possible types of business organization be specified and the Proposed Marketing Agreement be made applicable thereto. If this were not done, some persons would be exempt from the provisions of the Proposed Marketing Agreement, even though the character of their business were such that they were subject to regulation. This would operate to cause the regulatory aspects of the Proposed Marketing Agreement to be very discriminatory between different firms, and it is to obviate this inequitable result that "person" is so defined as to cover all types of business organization.

"Producer" means any person, irrespective of whether any such person is also a handler, who produces milk in conformity with or subject to, the health requirements applicable for milk to be sold for consumption as milk in the Topeka Marketing Area. Milk which does not meet these requirements cannot legally be sold for consumption as fluid milk in the Topeka Marketing Area, hence the handlers of such milk should not be subject to any Proposed Marketing Agreement relating to such milk. But all milk which meets the health requirements is in actual or potential competition with all other such milk, and handlers of such milk must be subject to any Proposed Marketing Agreement for such to be effective in regulating the handling of such milk.

"Handler" means any person, irrespective of whether such person is a producer or an association of producers, wherever located or operating, who (a) engages in such handling of milk, which is sold as milk or cream in the Marketing Area, as is in the current of interstate or foreign commerce, or which directly burdens, obstructs, or affects interstate or foreign commerce in milk and its products.

One of the major objectives of this Proposed Marketing Agreement is to place all handlers on a comparable basis with respect to the purchase price they are required to pay for milk sold in the several use classes. In order that this major purpose of the Proposed Marketing Agreement be accomplished, all persons involved in the handling of milk and its products in interstate commerce, or so as to burden, obstruct, or effect interstate commerce, must be subject to the Proposed Marketing Agreement. All types of business setups and organizations are found. Hence, the definition of a handler must be broad enough to include all those persons who are in competition with each other so that no provision of the Proposed Marketing Agreement be discriminating in effect with respect to different firms or persons.

C. Market Administrator and provisions relating thereto.

Selection, Removal and Bond. In order that the Secretary can be assured that the administration of the Proposed Marketing Agreement is being carried out without any bias in favor of or against any group in the Topeka Marketing Area, it is necessary that he appoint the Market Administrator. This procedure has been followed in all Federal milk licenses, due to the fact that it has proven more feasible than other types of administrative organization. The person selected needs to be one of wide experience and one with complete understanding of the Proposed Marketing Agreement. In order further to insure unbiased administration of the Proposed Marketing Agreement, it is necessary that the Market Administrator, selected by the Secretary, be subject to removal by the Secretary and only the Secretary. For further assurance to all concerned of the faithful and honest performance by the Market Administrator of his duties, the Market Administrator is required to execute and deliver to the Secretary a bond in such amount as the Secretary may determine, with surety thereon satisfactory to the Secretary.

Compensation. The Secretary determines the salary of the Market Administrator he selects. This salary is considered an expense of administering the Proposed Marketing Agreement.

Duties. In order that there shall be proper administration of the Proposed Marketing Agreement, the Market Administrator must:

1. Keep such books and records as will clearly reflect the financial transactions provided for in the Proposed Marketing Agreement. In order for the Secretary to be assured, and to assure producers and handlers of proper administration of the Proposed Marketing Agreement, the books and records of the Market Administrator must be subject to his examination at any and all times. Only by being so assured can the Secretary know definitely that the Proposed Marketing Agreement is effectuating the policy of Congress as stated in the Agricultural Adjustment Act.

2. In order for the Secretary to be informed, furnish such information and verified reports as the Secretary may request.

3. In order to assure that his duties, for which the Secretary is responsible, are being properly carried out by his employees, obtain a bond for each employee who handles funds entrusted to the Market Administrator under the provisions of the Proposed Marketing Agreement. Most of the money handled in the Administrator's office belongs to handlers or producers, and the bond would cover possible losses to them. This insurance being necessary to the proper administration of the Proposed Marketing Agreement, the expense of such bond should be a part of the expense of administration.

4. Publicly disclose, except as otherwise directed by the Secretary, the name of any person who has not:

(1) Made reports pursuant to article V of the Proposed Marketing Agreement. These reports are the only way in which the Administrator can determine in a reasonable length of time sales made by each handler in each class, etc. These reports are necessary in order that prices to producers be computed by the Market Administrator and the purpose of the Proposed Marketing Agreement be effectuated. If the handler pays his producers without filing these reports, other handlers and also the producers should be informed that that handler had not filed reports and that the Administrator could not determine if the handler had paid the correct prices for his milk. If the producers are not so informed, they might assume that they had been paid the correct price. The Administrator must make it known that he had not verified the prices paid and, therefore, was not responsible for its correctness.

(2) Made payments pursuant to article VIII of the Proposed Marketing Agreement. The Market Administrator obtains information to compute the price that shall be paid by each handler and also obtains information as to what price was paid. With no notice to the contrary, a producer might assume that the price he received was the one to which he was entitled, when in fact, it might be different from what the Market Administrator had computed as being correct. Because the producer might make such an incorrect assumption, the Market Administrator must notify such producers that the prices paid by the handler were not those computed by the Market Administrator. All handlers will be in the same competitive position only if they pay the price as computed by the Administrator. The other handlers in the market in order to be on equal competitive terms must know the names of those competitors who have not paid the same price for their milk (subject only to deviation adjustments) as they have.

D. Inter-handler sales. (Section 2 of article III of the Proposed Marketing Agreement.) Milk sold by a handler to another handler shall be presumed to be Class I milk; provided, that if such selling handler, on or

before the date fixed for filing reports pursuant to article V, shall furnish proof satisfactory to the market administrator that such milk has been sold or used by the purchasing handler other than as Class I milk, then, and in that event, such milk shall be classified as Class II milk.

The Proposed Marketing Agreement is designed to place all handlers on a comparable basis with respect to the purchase price they are required to pay for milk sold in the several use classes. This objective can be accomplished only by a close check on the ultimate use of the milk. The marketing of milk is very complicated and milk often passes through several handlers before it reaches the ultimate user. The handlers who purchase milk and cream are so numerous, of such varied character, and often so sporadic in their purchases that the market administrator would have, practically, an impossible task to perform to check each sale of milk and cream to other handlers to be sure he knew the ultimate use of that milk and cream.

Hence, the efficient and economic procedure is to charge this milk and cream sold to another handler at the Class I price at some point before it starts its devious routes to the ultimate consumer. But, at the same time, allowance is made so that the selling handler, if he does sell the milk and cream for other uses than Class I, is charged the prices applicable to such uses. In this way only can the administrator be sure that the milk and cream sold by all handlers cost each handler the same.

E. Equalization of prices paid all producers for milk of the same grade and quality sold in Topeka. There is provided in the proposed marketing agreement a plan whereby the total proceeds from the sale of milk by producers to handlers in the Topeka marketing area are pooled, and apportioned to producers on a uniform basis. Each producer delivering milk to handlers signing the agreement is to receive the same minimum price for milk of equal grade and quality after making allowance for base and surplus production as described on page 48.

In establishing such uniform prices on the Topeka market it is expected that the prices received by producers will not only be stabilized to some extent but will also more accurately reflect the supply of and demand for milk in the entire market, than it would if the pooling plan were not adopted. The pool plan makes the prices received by each producer independent of the business success of individual handlers. If milk is sold to dealers on a class basis without a pooling arrangement, the price received by producers shipping to a particular handler may decline because of a loss of Class I business, and not because of any change in the demand and supply situation in the entire market. A handler cannot, of course, continue to pay less than the market price and stay in business. Producers shipping to such a handler will in time decide to ship their milk to some other handler. But there is a certain amount of inertia to the making of such a change. Arrangements would have to be made for the sale of their milk to other handlers. For a time, a handler might be able to pay less than that paid by other handlers, even though a minimum price is established

for each class of milk, because of losing a certain amount of Class I trade. The pool plan is designed to eliminate such price inequalities.

The pool plan is also expected to stabilize the prices received by individual producers. It is generally recognized wherever milk is sold on a class basis according to use without a pool plan that the average price paid for all milk delivered to a market is more stable than the price paid by individual handlers. The proportion of milk sold as Class I varies between handlers from month to month. For instance, some handler may have a trade which is little affected by persons leaving on vacation while the trade of another handler may be greatly affected. Some handler may also sell a larger proportion of his milk as Class I throughout the entire year than others. Consequently if milk is purchased from producers on a classified use basis, even with a specified minimum price for each class, the average price paid producers by each handler would probably be different, and the difference would vary from month to month for the same grade of milk. One handler may pay a higher price one month than another handler and a lower price the following month. The average or blended price received for milk by each producer would fluctuate more than the average price of all milk in the market. The pooling arrangement specified in the proposed marketing agreement would eliminate such fluctuations. Handlers, however, would not be prohibited from paying a premium for milk of special grade or quality.

No attempt is made in this proposed agreement, by setting up a pool plan, to prevent an increase in the production of milk for sale on this market. If the minimum price is established at too high a level, production can therefore, be expected to increase and to force a reduction in price.

F. Computation, accounts and payments. Article V of the Proposed Marketing Agreement sets forth three types of reports which handlers are required to submit and provides for the verification of these reports. The necessity for all these reports and for their verification becomes apparent with the realization of the nature of a milk market and practical operating problems which arise in making effective the class prices in the payments to all producers of uniform prices which reflect the utilization of milk by all handlers.

Section 1 required handlers to submit reports on or before the fifth day after the end of each delivery period, showing, in such detail and form as the Market Administrator discovers to best fit the particular conditions, the information as to all milk or cream received by handlers and the utilization of such milk. With this information before him, the Market Administrator is able to determine for each handler the classification of the milk, the total payments to be made to producers therefore, and, after combining, the total payments of all handlers, the uniform price which will distribute such total amount of money to all producers who delivered the milk to all handlers.

Section 2 provides for other reports with respect to producers delivering milk to a handler. These reports enable the Market Administrator to secure needed information with respect to producers after a handler has newly become a party to the agreement or to request information not already in his hands, which is needed for full knowledge in order to effectuate and to determine the effects of the order in relation to the policy of the Act. The second report provided for under section 2 requires that each handler report to the Market Administrator upon first receiving milk from any producer who has not previously shipped milk to that handler, in order that the Market Administrator may keep his records up to date with respect to the producers delivering to each handler and to the coming into the market of producers who did not market milk regularly, for thirty days prior to the effective date of the Marketing Agreement.

Section 3 provides for the regular reporting by handlers of their payments to producers for each delivery period in the form of a copy of the handler's producer payroll. Such a report expedites the routine checking of compliance with the Marketing Agreement and provides in an economical way the information necessary for the Market Administrator to maintain adequate producer records.

Section 4 provides that each handler shall permit the Market Administrator to verify the information contained in all reports. The importance of routine verification of all reports is readily understandable in view of the intricate and detailed transactions which are inherent in the milk business. Where errors both willful and accidental may so readily creep in and affect the returns to producers, successful operation of a marketing agreement will depend to a large extent upon the extent to which the Market Administrator assures himself of the correctness of the figures supplied him in the reports and of the correctness of the sampling, weighing and testing of butterfat of the milk which is delivered by producers. Such routine verification is thus extremely necessary for the effectuation of the provisions of the Marketing Agreement.

The provisions of article VI of the Proposed Marketing Agreement relate to those handlers who are also producers. Section 1 relieves such handler from the application of provisions of the Proposed Marketing Agreement if he purchases no milk from producers, but requires that he make reports when requested by the Market Administrator. Section 2 prescribes how a handler who is a producer and buys milk from other producers shall make payments for the milk purchased. Since all other handlers purchase milk in a specified way from producers and since the milk produced by a handler is necessarily intermingled with what he may buy, it is necessary to specify the relation between milk produced and milk purchased.

Article VII of the Proposed Marketing Agreement is purely administrative in nature but necessary in order to definitely set forth the pro-

cedure by which the Market Administrator is to translate the class prices into uniform prices to all producers; with the adjustment to equitably apportion among producers the total value of milk for each delivery period according to production during a representative period of time.

Section 1 of this article provides for the computation of the total value by classes of all the milk purchased by any handler to determine his total obligation to producers for milk purchased.

Section 2 provides for the computing of the payments per hundred-weight, uniform, with stated adjustments, to all producers delivering to handlers, which will distribute the total value of milk received from producers by all handlers. The Market Administrator is required to notify all handlers and publish the uniform prices in effect for any delivery period on or before the 10th day after the end of such delivery period. The Market Administrator is thus allowed five days from the time of receiving reports of handlers for the necessary computations. The announcement of the price on this day allows a period of five days after receiving notice of the price before payment is required to be made to producers as a reasonable time for the clerical work necessary on the part of handlers in preparing checks and statements for distribution to producers. The series of computation is as follows:

(1) Combine into one total the obligations computed for all handlers who are not in arrears as to any payments for the previous delivery period. Thus, is made up the total market pool or the total amount of money to be distributed by means of the uniform prices. If a handler should fail to pay into the Market Administrator that part of his total obligations which is to be paid to producers by way of the Market Administrator, the paying out of the pool will be reduced by that amount. If a handler has so failed in one delivery period, it is reasonable to expect that he may repeat his failure in the next. Experience in operating market pools under licenses has shown that handlers will tend to make their reports and then fail to make the payments, making necessary a further guide to the make-up of the pool than that of having a report in hand. Such a procedure, prescribed for the Market Administrator, in no way relieves the handler in his violation of the order, penalties for which are provided in the Agricultural Adjustment Act, as amended.

(2) From the total amount paid into the pool, by handlers, there is first subtracted the amount necessary to pay for milk delivered by each producer in excess of his base, at the Class II price.

(3) There is now left in the pool the net amount of money to be divided over all the milk which was delivered by producers not in excess of the bases. This sum is divided by the quantity of butterfat in the delivered base milk, the result being the blended price per pound of butterfat for base milk.

(4) There is a contingency, however, that not all of the handlers will make the portion of the payments to producers through the Market Administrator, which is prescribed in article VIII. To cover such a contingency the Market Administrator is authorized to deduct from the rate per pound of butterfat an amount between 1 and 2 cents (Paragraph 4, Section 2). This deduction from the blended price of butterfat in base milk is not a deduction at all but a deferring of the full payment until the money is sure to be in hand.

(5) Paragraph 5 of the computations is a companion to paragraph 4 and to section 3 (Proration of cash balance) in providing for the distribution of all money in hand for producers up to the next preceding delivery period but one. By this means all of the collections for which the 1 to 2 cents were set aside are distributed each delivery period (one delivery period intervening) as the collections are made. It is more important to consider these three provisions in the light of the practical operation of the plan contained than to consider them in the light only of possible willful violations of the Proposed Marketing Agreement. Inevitably some reports will be late, some payments will fail to reach the Market Administrator on time, and errors will be made in both reports and payments. These three provisions give the Market Administrator a method by which to meet the practical problems which will arise in connection with the pool and still preserve practical equity in the distribution of money as between producers. The blended price of base milk announced by the Market Administrator, therefore, represents the pooled utilization of milk for the delivery period less 1 to 2 cents, plus whatever hitherto uncollected money has come into the Market Administrator's hands for previous delivery periods.

G. Base-rating. Heretofore, the discussion has shown that all milk in the market is pooled, and priced to handlers in accordance with the form in which it is sold by them, and the economic basis for such pooling and pricing of milk has been pointed out in some detail. The next step in the marketing plan is the proration to producers of the proceeds of sales to handlers.

The proration plan that has been proposed and that has been incorporated in the Proposed Marketing Agreement is the type of plan commonly known as the "base-rating" or "base-surplus" plan. The problem involved is primarily that of dividing up the fluid milk market so that each producer shares equitably therein. It has been pointed out^{1/} that in this market fluid milk sales vary much less on a seasonal basis than production. Hence, during the short production season, milk production within the Topeka milk supply areas is more nearly equivalent to fluid milk sales than during the season of flush production, when production is usually

1/ Gaumnitz, E. W., and Reed, O. M., The Price Structure for Milk, Technical Paper No. 1, Dairy Section, Agricultural Adjustment Administration, United States Department of Agriculture.

considerably in excess of fluid milk sales. On the other hand producers vary markedly from each other with respect to the seasonality of their production. Many producers produce a practically constant volume of milk throughout the year, and hence their production conforms quite closely on a seasonal basis to the seasonal requirements of the fluid milk trade. Other producers produce a volume of milk that varies markedly from season to season, and hence their production does not conform closely, on a seasonal basis, to the seasonal requirements of the fluid milk trade. The plan of making each producer's base equal to his production during the short season of production is an attempt to prorate the fluid milk market among producers on an equitable basis. Producers are at liberty to increase their production during the flush season if they so desire, but for this seasonal surplus milk they receive surplus milk prices. They may increase or decrease their production as they see fit. Under the base-rating plan, however, many producers find it to their advantage to produce a more even volume of milk from season to season rather than a volume that fluctuates widely from season to season. Some producers even cut their seasonal production peaks by shifting the freshening period of their cows; others feed relatively more grain than formerly during the short season. Still others increase their production during the base period (the season of short production) by increasing the number of cows on their farms, but do not materially change the seasonality of their production. Generally speaking, producers as a group have found it to their advantage to produce a more constant volume of milk from season to season when operating under the base-rating plan than when not so operating.

Section 5 of article VIII provides that for the purpose of calculating the bases of producers the Market Administrator shall determine a figure with respect to the butterfat contained in deliveries of milk in bulk to handlers by each producer as follows:

1. Effective for the calendar quarter ending on June 30, 1936, take (a) 90 percent of his average delivery per day during the first 15 days of January, or (b) his average delivery per day during the months of July, August, September, October, November and December, 1935, if such figure is higher than 90 percent of his average delivery per day during the first 15 days of January 1935, or (c) his average delivery per day during the period beginning February 16 and ending March 15, 1936, if that is less than 95 percent of his average delivery per day during the months of July, August, September, October, November and December, 1935; and

2. Effective for each calendar quarter after June 30, 1936, divide the total butterfat in milk delivered by each producer not in excess of his base during each delivery period of the next preceding calendar quarter by the number of days in such next preceding calendar quarter and take such a percentage of the result as will make the total of all figures so determined approximately equal to 110 percent of the average Class I milk per day sold, during the fourth calendar quarter of the next preceding calendar year, by all handlers to whom such milk was delivered.

3. At the request of any producer who is also a handler and for whom no figure is effective pursuant to paragraph 1 or 2 of this section, divide the total butterfat in milk delivered, during the six full delivery periods next preceding the date of such request, from such producer in bulk to handlers, by the number of days in such six full delivery periods. Any figure determined pursuant to this paragraph shall be effective through the full calendar quarter next following its determination and thereafter shall be superseded by a figure effective pursuant to paragraph 2 of this section.

4. The Market Administrator shall notify each producer of the figure, and its equivalent in milk of the average butterfat content, delivered by him during the preceding quarter, determined for such producer pursuant to this section.

That the base-rating plan is a commonly accepted market mechanism, is evidenced by the large number of milk markets wherein the proceeds of sales to handlers are prorated to producers through the base-rating plan. On the basis of available information, it appears that the base-rating plan was started in Baltimore, Maryland, in 1918. Since then it has been instituted in a large number of important milk markets and has come to be recognized as an equitable method of prorating to producers the proceeds of sale to handlers. (See table 16.) Table 17 shows the number of markets operating under the base-rating plan by years, 1918-1934. One market started operating under the plan in 1918. The use of this plan of prorating to producers the proceeds of sales to handlers spread slowly, and by 1929 ten markets were operating under the plan. By 1933, the number of markets operating under the plan had increased to 27, and in 1934, 34 markets were operating under the plan. The development of the base-rating plan has not been limited to any one section of the country.

According to the figures given in Table 17, markets in 17 States were operating under the plan. The States included, among others, such widely separated States as Massachusetts, California, Georgia, Oklahoma, and Michigan.

H. Payments for Milk. Article VIII of the Proposed Marketing Agreement provides that the minimum class prices shall be paid by handlers for each delivery period not later than the 15th day following the delivery period in the form of uniform prices to all producers, subject to specified adjustments which are authorized by the Agricultural Adjustment Act. The adjustment which most radically affects the returns of any producer is that adjustment depending upon deliveries of milk of a producer during a representative period of time which gives rise to the base-rating plan already discussed.

Paragraph 1, therefore, provides that each producer shall be paid for milk delivered not in excess of his base, the blended price. Paragraph 2 provides that milk delivered by each producer in excess of his base shall

Table 16. Milk markets operating with base-surplus plans 1/ as a part of the market structure, and date of institution of base-surplus plan on these markets, as of February 1, 1935.

Market	State	Effective date of license	Year base-surplus plan was established (Approximate)
Philadelphia 2/	Pennsylvania	Aug. 25, 1933	1919
Chicago	Illinois	Feb. 5, 1934	1929
Des Moines	Iowa	Feb. 14, 1934	1930 3/
Omaha-Council Bluffs	Nebraska-Iowa	Feb. 23, 1934	Feb. 23, 1934 4/
Evansville	Indiana	Feb. 26, 1934	1932
St. Louis	Missouri	Mar. 2, 1934	1930 5/
Boston	Massachusetts	Mar. 16, 1934	1930 6/
Lincoln	Nebraska	Mar. 17, 1934	1934
Wichita	Kansas	Mar. 17, 1934	Mar. 17, 1934 7/
Greater Kansas City	Missouri-Kansas	Mar. 17, 1934	1931
Detroit	Michigan	Apr. 1, 1934	1923 8/
Newport	Rhode Island	Apr. 1, 1934	1923
Providence	" " "	" " "	1931
New Bedford	Massachusetts	" " "	1931
Fall River	"	" " "	1931
Richmond	Virginia	May 1, 1934	1930
Leavenworth	Kansas	May 16, 1934	May 16, 1934
Quad Cities	Iowa-Illinois	June 1, 1934	July 1933 9/
Louisville	Kentucky	June 1, 1934	1929 10/
Los Angeles	California	" "	Feb. 1926 11/
Ann Arbor	Michigan	July 1, 1934	1923 12/
Alameda County	California	" "	1930
Battle Creek	Michigan	" "	Sept. 1933
Bay City	"	" "	May 3, 1934
Flint	"	" "	May 3, 1934
Grand Rapids	"	" "	1923
Kalamazoo	"	" "	1933
Lansing	"	" "	1930 13/
Muskegon	"	" "	1930
Port Huron	"	" "	July 1, 1934 14/
Saginaw	"	" "	1927
Baltimore	Maryland	Aug. 1, 1934	1918
Savannah	Georgia	Aug. 16, 1934	1929
Tulsa	Oklahoma	Aug. 21, 1934	Nov. 11, 1934 15/
San Francisco	California	Oct. 2, 1934	1930
Southern Illinois	Illinois	Nov. 1, 1934	1932
Atlanta	Georgia	Dec. 1, 1934	1932 16/
San Diego	California	Feb. 1, 1935	1932

Compiled in most cases from transcripts of hearing for proposed marketing agreement for milk.

(Continued)

Table 16 (Continued)

- 1/ Sponsored in every case by a cooperative association of producers in the market.
- 2/ Operating under the "old" license policy.
- 3/ Base-surplus plan dropped from license December 5, 1934.
- 4/ Apparently no base-surplus plan prior to the license.
- 5/ Base-surplus plan discontinued under license as of November 16, 1934.
- 6/ There had been in effect for several years another plan prior to the present one.
- 7/ No base-surplus plan prior to license.
- 8/ Horner, J. L., Michigan State College, Special Bulletin No. 170, page 31.
- 9/ Abandoned in March 1934. Added to License September 1, 1934.
- 10/ Introduced about 1929 but discontinued in fall of 1930. Reestablished in later years.
- 11/ Source: U. S. D. A. Technical Bulletin No. 179, Cooperative Marketing of Fluid Milk, by Hutzel Metzger.
- 12/ Abandoned after several years. Reestablished in 1930.
- 13/ Operated only temporarily. Effected again in 1934.
- 14/ The base-surplus plan had been used over a small part of the market for several years previously.
- 15/ Established as a license feature November 5, 1934.
- 16/ Two early attempts failed. Reestablished in February 1934.

Table 17. Number of milk markets wherein base-surplus plans were instituted during the year, and cumulative total, 1918 - 1934, inclusive.

Year	Number of markets where base-surplus plan was started during the year	Cumulative total
1918	1	1
1919	1	2
1920		2
1921		2
1922		2
1923	3	5
1924		5
1925		5
1926	1	6
1927	1	7
1928		7
1929	3	10
1930	8	18
1931	2	20
1932	4	24
1933	3	27
1934	7	34

Table 16: The data are incomplete in that no information is available covering all milk markets. The data given in the above table are taken from transcripts of hearings on milk licenses, and four markets operating under a base-surplus plan were excluded due to lack of information with respect to the date the plan was instituted.

be paid for at the class II price.

Paragraph 5 provides for the completion of the payment by each handler of the full classification value, but no more, of the milk received by a handler as the handler made use of it by paying to or receiving from the Market Administrator the difference between his payments direct to producers and the classification value of his milk. Thus, when all of the payments set forth in article VIII have been made, each handler has paid the minimum class prices uniformly with all other handlers, and producers have received uniform prices for milk delivered subject to the specified adjustments which translate a mathematically uniform price into practically uniform returns in accordance with the situation of the producer.

I. Deduction for Marketing Services (article IX of the Proposed Marketing Agreement). The Agricultural Adjustment Act, as amended, states that the Secretary of Agriculture may provide for marketing services as follows, [Section 8c(5)(F)]:

"Providing (i) except as producers for whom such services are being rendered by a cooperative marketing association qualified as provided in paragraph (F) of this subsection (5) for market information to producers and in the verification of weights, sampling and testing of milk purchased from producers and for making appropriate deductions therefor from payments to producers. . . ."

The types of service to be provided are specifically set forth, namely, checking of weights, sampling and tests of milk and market information. The former has a direct bearing upon the size of payments received by producers, and, in turn, the stability of the market structure; the latter provides for the dissemination of such information to producers as will aid them in a better marketing of their products.

Article IX of the proposed marketing agreement provides for market services to producers. In section (1) provision is made for a deduction of three (3) cents per hundredweight from the payments made to producers, such monies to be expended by the market administrator for market information and the verification of weights, sampling and tests of milk purchased from these producers. Similarly, section (2) provides that if a cooperative marketing association is found to be qualified under the requirements of paragraph(F), section 8c (5) of the act, and is properly rendering the services to producers enumerated in article IX section (1) of the proposed marketing agreement, then the monies deducted by handlers from the members of such association shall be paid over to that association.

It is declared to be the policy of Congress, as stated in the Agricultural Adjustment Act, to recognize and encourage producer cooperatives. There is no restriction in the proposed marketing agreement which would

operate to the disadvantage of, or tend to supplant, their work. Rather, such services are encouraged by reason of a recognition that the cooperatives, due to a close relationship with their members, probably are in a better position to render these services to their members than is the market administrator.

Experiences of the cooperatives have demonstrated that the rendering of marketing services to their members is a desirable feature in the proper functioning of the market mechanism. Producers generally do not have available facilities to determine accurately the weight of their milk. Neither are they in a position to test precisely its fat content. Yet, without verification of the weights and tests as determined by handlers, producers often question the accuracy of the prices paid them. Marketing services in the nature of check weighing and testing are thus rendered because the producers themselves desire that service.

Undoubtedly, spot checking of the purchases of milk of individual handlers by the market administrator would suffice in verifying weights and tests, and, in turn, the accuracy of price computations. However, the producers, as stated heretofore, desire more than this. Their primary concern is that of ascertaining, not the general accuracy of the weights and tests determined by handlers to whom they deliver milk, but of the exact weights and tests of their own deliveries.

The presentation of marketing information to producers has become a necessary adjunct to an intricate marketing process. With this information producers are better enabled to adjust their production and marketing to current market conditions. The United States Department of Agriculture regularly furnishes information to producers in the form of crop and livestock reports, outlook statements, etc. This service is maintained only because producers want it.

The dissemination of current market information, such as price aspects of the market, local supply and demand conditions, etc., by the market administrator serves a similar purpose.

A summary of expenditures from the marketing service fund under License No. 92 for the year 1935 is shown in Table 18. These figures indicate that a three-cent deduction is reasonable, and adequate to cover the costs of these services.

J. Expenses of Administration (Article X of the Proposed Marketing Agreement). The market administrator must necessarily incur many expenses in his operations: must maintain a personnel sufficient to (a) compute periodically the prices to be paid by handlers to producers and determine the adjustments from those prices, (b) record and audit the sales reports

of handlers, and (c) provide for contract work with handlers and other parties in the market.

Table 19 shows the cost incurred in the administration of License No. 92 during the year 1935 on a check off of two cents a hundredweight of milk. The total cost of administration amounted to \$.01769 per hundredweight. In order to provide for more adequate auditing of the sales reports of handlers Article X of the proposed marketing agreement for the Topeka Marketing Area requires each handler to pay to the market administrator a sum not exceeding three(3) cents per hundredweight, the monies so obtained being used to cover the cost of administration of the proposed marketing agreement. The exact amount per hundredweight is to be determined by the Market Administrator. In view of the experience gained in the administration of License No. 92, and the need for additional audits of handlers' sales reports, it appears that the maximum charge for meeting costs of administration, two (2) cents per hundredweight as specified in Article X of the proposed marketing agreement, is reasonable.

Table 18. Expenditures from the marketing service fund under License No. 92, Topeka Sales Area, for the year 1935.

Expenditures	Amount
	<u>Dollars</u>
Salaries	580.93
Testing and weighing	71.86
Furniture and fixtures	35.86
Miscellaneous	<u>2.37</u>
Subtotal	691.02
Paid to associations	<u>3,518.37</u>
Grand total	4,209.39
Cost of service to non-members per cwt. of milk	.02914

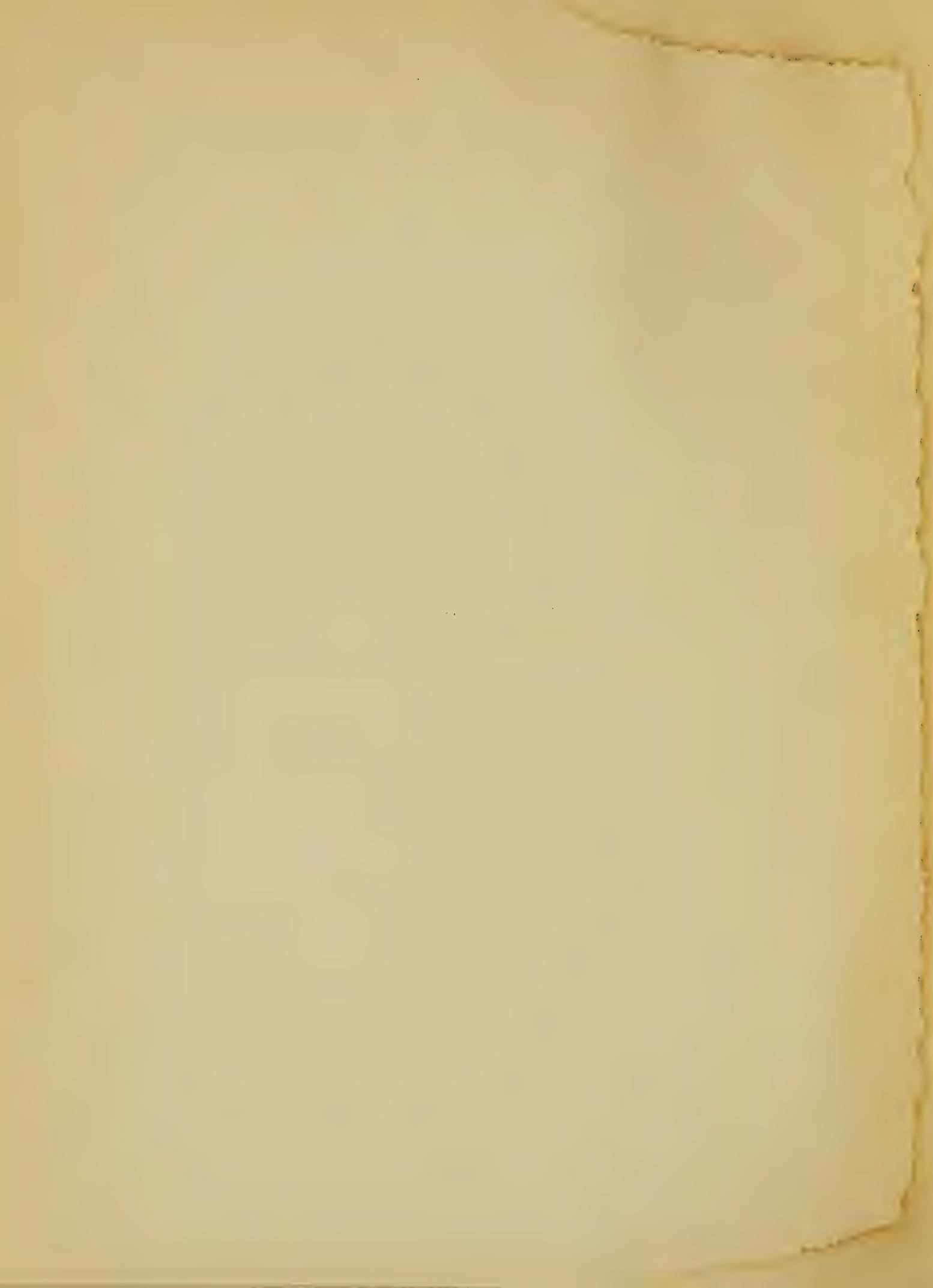
Compiled from reports of the Market Administrator under License No. 92.

Table 19. Expenditures from the administrative fund under License No. 92, Topeka Sales Area, of the year 1935.

Expense item	Amount
	<u>Dollars</u>
Salaries	,2,742.31
Rent	255.00
Travel expense	142.64
General expense	<u>311.86</u>
Total	3,451.81
Cost per cwt. of milk	.01769

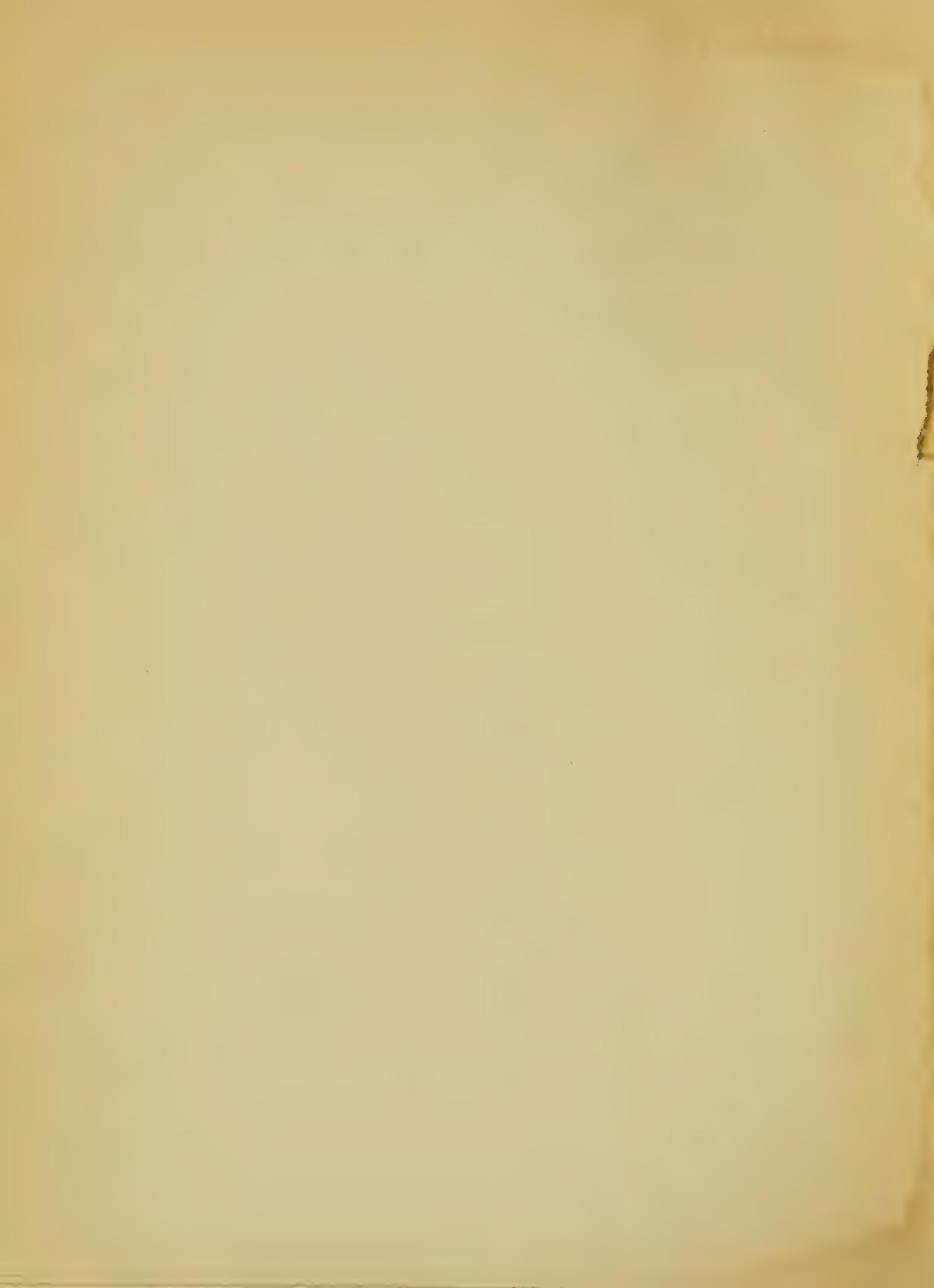
Compiled from reports of the Market Administrator under License No. 92.

APPENDIX A



THE PRICE STRUCTURE FOR MILK

Technical Paper No. 1, Dairy Section,
Agricultural Adjustment Administration,
United States Department of Agriculture.



THE PRICE STRUCTURE FOR MILK

by

E. W. Gaumnitz 1/

and
O. M. Reed 2/

Introduction

One of the most important and perplexing problems encountered in milk marketing is that pertaining to the classification of milk. This problem is merely one of many, although fundamental and probably the most important, that may and perhaps must be approached through a study of the price structure for milk.

This paper was written for use in connection with marketing agreements and orders for milk. However, numerous questions have arisen pertaining to the classification of milk, the price structure, and related problems, and it is for these reasons that this paper is made available at this time.

This analysis of the price structure has been developed under assumptions of competitive conditions. Numerous details have been omitted in the interest of brevity and in order that the discussion be suitable for general use. The analysis will be expanded as rapidly as possible, and the later phases of the work are to deal primarily with the price structure when the assumptions upon which this paper is based are varied.

The authors have received aid from several persons in the development of this paper. Dr. Warren C. Waite helped draft the paper in all but the latest stages of its development, and Dr. Harold B. Rowe contributed many valuable suggestions relative to the technique of the analysis. Others have made fruitful suggestions and have aided materially in editing the paper.

1/ Chief, Dairy Section, Agricultural Adjustment Administration, United States Department of Agriculture.

2/ Senior Agricultural Economist, Dairy Section, Agricultural Adjustment Administration, United States Department of Agriculture.

Part I

THE PRICE STRUCTURE FOR MILK FOR THE COUNTRY AS A WHOLE

A complete analysis of the price structure for milk for the country as a whole would fill a rather sizable volume. However, for the purposes of this paper, it is unnecessary to devote a great deal of time and space to the development of such an analysis. All that is intended in Part I is to develop a rather general treatment of the price structure for milk for the country as a whole, in order that the analysis of the price structure for milk within a milk shed may be approached more satisfactorily.

An explanation of the price structure for dairy products for the country as a whole involves consideration of (1) the conditions affecting the demand for milk, and (2) the supply characteristics of milk with respect to the localization of particular phases of the industry and the interchangeability of milk between different dairy products. Likewise, an explanation of the price structure for milk within a particular area or a particular milk shed involves consideration of (1) the nature of the demand for the different products derived from milk, and (2) the conditions affecting the supply of milk.

A. The nature of the demand for milk. It is well recognized that the demand for any commodity is a composite of the demands of the different groups of people who are ready to purchase different quantities of it at different prices. Similarly, the demand for a product such as milk, which is used in the production of a number of different products, ^{1/} is

-
- 1/ In 1932 the total volume of milk used in the manufacture of dairy products and used by the non-farm population as fluid milk and cream was distributed among the various uses as follows:

Product	Percent of total volume used
Butter - creamery and whey	45.6 ^{a/}
Other manufactured products	13.2 ^{a/}
Milk used by non-farm population as fluid milk and cream	41.2 ^{b/}
Total	100.0

a/ Compiled from estimates of the production of manufactured dairy products, Bureau of Agricultural Economics, U. S. Department of Agriculture.

b/ Compiled from Estimates of Consumption of Milk and Cream in Cities and Villages, Bureau of Agricultural Economics, U. S. Department of Agriculture.

the aggregate or composite demand for milk in all uses. Thus, although the different forms or products in which milk is used are competitive in the sense that each use competes with all other uses for a portion of the total supply of milk, and the derived demands are rival or competitive, in the aggregate they comprise the total demand for milk. The nature of the demand for fluid milk is discussed at length in Part III of this paper.

B. The supply characteristics of milk.

1. Localization of the industry. Although milk production is an important agricultural enterprise in practically every State in the United States, it nevertheless varies markedly between areas as to relative importance and is highly concentrated in certain areas. An important factor in this connection is the fact that the transportation system has developed so that certain areas possess a comparative advantage in the production of milk for use in the production of dairy products that are readily storable and transportable; and others have a comparative advantage in the production of milk for fluid consumption. Thus, the States of Iowa, Minnesota, Nebraska and Wisconsin produced 44.8 percent of the total volume of creamery butter produced in the United States in 1932 and 1933. Wisconsin and New York produced 64.8 percent and 62.1 percent of the total volume of cheese produced in the United States in 1932 and 1933, respectively. Of the total United States production of evaporated milk in 1933, Wisconsin and California produced 53.3 percent, and the five States of Wisconsin, New York, California, Illinois and Ohio produced 70.0 percent.^{2/} In those areas wherein large urban centers are situated, notably the New England and Middle Atlantic areas, as well as in the territory immediately surrounding other urban centers, the larger part of the total volume of milk produced is utilized in the form of fluid milk and cream.

2. The interchangeability of the supply of milk between uses. The milk supply of the country is interchangeable between uses, especially so in the case of manufacturing uses. In general, there is little difference between the quality requirements for milk used in the production of evaporated milk, butter, cheese and other manufactured dairy products. In addition to the fact that milk is markedly interchangeable between the uses noted above as far as quality requirements are concerned, processing facilities for the different products are so intermingled geographically, and, in fact, are in many cases available in one plant, that the matter of the location of the producer with respect to processing facilities for the different products is usually not important in

^{2/} Manufactured Dairy Products, Bureau of Agricultural Economics, United States Department of Agriculture.

preventing producers from shifting their milk from one channel of disposal to another. Thus, should relative price conditions warrant, the producer can in most cases shift his milk from one use to another. In the case of those plants manufacturing two or more products, the producer does not have to shift his milk from one plant to another, the shift or change in the relative volume of milk entering the different uses being accomplished by the plant management, and for the same reason that would lead the farmer to shift his milk from one use to another.

The interchangeability of the supply of milk between milk produced for use as fluid milk and that produced for use in the production of various manufactured dairy products is not so marked as is the interchangeability of milk between the different manufactured products. This is due in large part to the fact that in most milk markets milk used as fluid milk must be produced in accordance with more stringent sanitary requirements than is the case with milk produced for use in manufactured dairy products. However, this factor operates, principally, to lengthen the period of time necessary for a producer to shift his disposal of milk from manufactured dairy products uses to fluid use. The producer, in order to shift from the production of manufacturing milk to the production of fluid milk, must equip his barn and follow the procedure with respect to sanitation that is specified in the health ordinances of the city or town in which he wishes to sell fluid milk. This involves additional expense in producing milk, but, if the farm price of fluid milk is sufficiently above the farm price of manufacturing milk, the producer will equip his barn and conform to sanitation regulations in order that he may sell fluid milk. Thus, although the degree of interchangeability of milk between fluid use and manufactured product uses is less marked than the degree of interchangeability of milk between the different manufactured product uses, producers can and do shift from the production of manufacturing milk to the production of fluid milk when price relationships warrant. Similarly, when the price of fluid milk declines to a point where it is not sufficiently high to cover the additional costs of producing milk for fluid consumption, producers discontinue the production of milk for consumption as fluid milk and produce milk for use in the production of manufactured dairy products.

C. Factors affecting the general level of the prices of dairy products.

1. Demand factors. Numerous factors influence the demand for dairy products, such as the volume of the money income of consumers, consuming habits, etc. Perhaps the most important of the factors affecting the demand for dairy products is the volume of money consumers have available for the purchase of goods. Thus, the prices of dairy products vary directly with the income of consumers (assuming constant supplies). The relationship between the index of the farm prices of dairy products and

the index of factory payrolls (taken as a measure of changes in the income of consumers) is shown in Figure 1. As was stated above, numerous factors affect the demand for milk. However, for the purposes of this paper, it is unnecessary to discuss them in detail.

2. Factors affecting the supply of milk. The changes in the volume of milk that will be forthcoming from a given number of cows due to changes in weather, pasture and crop conditions need no comprehensive treatment here, since it is obvious that sudden and wide variations in the weather, droughts and other unusual weather conditions that operate to reduce or increase the quantity and quality of feed relative to the number of livestock, all tend to cause variations in the supply of milk.

Aside from the factors noted above, changes in the prices of dairy products relative to the prices paid by milk producers for the articles used in milk production, as well as changes in the prices of dairy products relative to the prices of other farm products, affect the volume of milk produced. In the Middle West, for example, changes in the prices of competing farm products have an important effect on milk production. An increase in the price of beef, or a relative decline in the prices of dairy products, is sufficient to cause large numbers of farmers in this section, particularly in the area west of the Mississippi, to turn to raising beef steers and heifers and let the calves suckle the cows longer than was the practice before the change in relative prices. In addition, in numerous cases where more than one livestock enterprise is followed on the farm, a relatively larger volume of the feed available is fed to livestock other than milk cows when prices of alternative livestock products become favorable relative to the prices of dairy products.

D. Relationships between the prices of dairy products in different markets.

Since most manufactured dairy products are readily transportable, the price of a product such as butter tends to vary between markets by not more than the amount necessary to cover the cost of shipping the product (freight and handling costs) from one market to another. Thus, in Chicago, Illinois, situated in the large surplus butter-producing area comprising the East North Central and West North Central States, the price of butter is generally lower than in New York City by an amount sufficient to cover freight and handling charges from Chicago to New York City (New York City being located in a deficit butter-producing area). The decidedly close relationships between the prices of butter in different markets are shown in Figure 2.

The prices of cheese in different markets vary together (see Figure 3), partly for the same reasons as those advanced above with respect to butter and also because of the possibility of shifting from cheese production to the production of butter, which is more widely

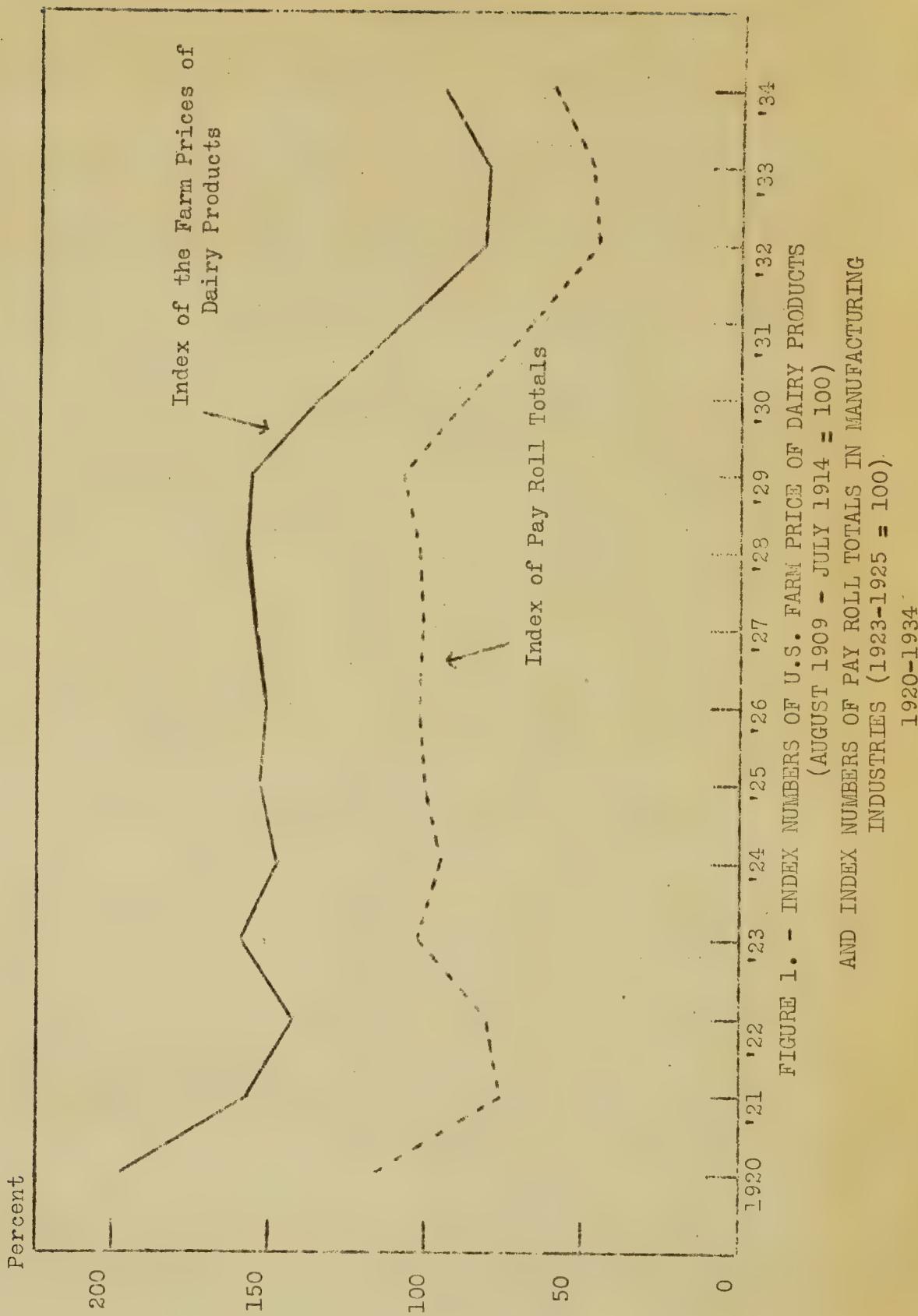


FIGURE 1. - INDEX NUMBERS OF U.S. FARM PRICE OF DAIRY PRODUCTS
(AUGUST 1909 - JULY 1914 = 100)
AND INDEX NUMBERS OF PAY ROLL TOTALS IN MANUFACTURING
INDUSTRIES (1923-1925 = 100).
1920-1934

transported. The same relationships exist with respect to evaporated milk.

In view of the foregoing, it should be evident that the market for the most important manufactured dairy products is national in character and that the price of milk or butterfat used in the different products noted above in any particular area is closely associated with the price of milk so used in any other area.

E. Relationships between the price of milk used in different products.

As was pointed out in B above, the supply of milk is markedly interchangeable between uses in the case of milk produced for manufacturing purposes and to a lesser extent between fluid milk and manufacturing milk uses. This factor operates to establish close relationships between the price of milk in different uses, in the country as a whole, as well as within areas. (See Figure 4.) Thus, although the price of milk produced for use as fluid milk is generally higher in any particular area than the price of milk produced for use in manufactured dairy products (for the reasons advanced in section B and section C), and therefore the market for fluid milk in any particular area may be considered as a local market, the price of milk produced for use as fluid milk varies with the price of such milk in any other area and also varies with the price of milk produced for use in manufactured dairy products, both for the country as a whole and in the different sections of the country.

Table 1. Wholesale prices of butter and cheese, index numbers
of milk prices and index numbers of payroll totals,
1920-1934.

Year	Wholesale prices of American cheese		Index numbers of farm prices paid to milk dealers		Index numbers of prices paid by milk users		Index numbers of payroll totals	
	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
1920	61.4	58.65	-	24.9	191	-	197	117.1
1921	43.3	41.68	21.46	20.53	18.3	158	149	76.2
1922	40.6	39.21	-	21.04	19.3	141	118	81.3
1923	46.9	46.03	-	23.86	22.1	155	153	103.3
1924	42.6	41.19	21.42	19.93	18.2	139	127	96.1
1925	45.3	44.07	24.44	22.99	21.5	142	138	100.6
1926	44.4	42.79	23.27	21.96	20.1	139	137	103.8
1927	47.3	45.78	25.51	24.6	22.7	141	147	101.8
1928	47.4	46.00	25.38	24.1	22.1	142	147	102.4
1929	45.0	43.75	23.63	22.2	20.2	142	142	109.1
1930	36.5	35.28	19.69	18.3	16.4	128	116	88.7
1931	28.3	27.05	15.41	14.4	12.5	98	82	67.5
1932	21.0	20.07	12.76	11.9	10.0	73	62	46.1
1933	21.66	20.79	13.08	12.12	10.2	72	63	48.5
1934	25.7	24.77	14.19	13.41	11.7	85	79.5	105

Compiled from records of the United States Department of Agriculture and the United States Bureau of Labor Statistics.

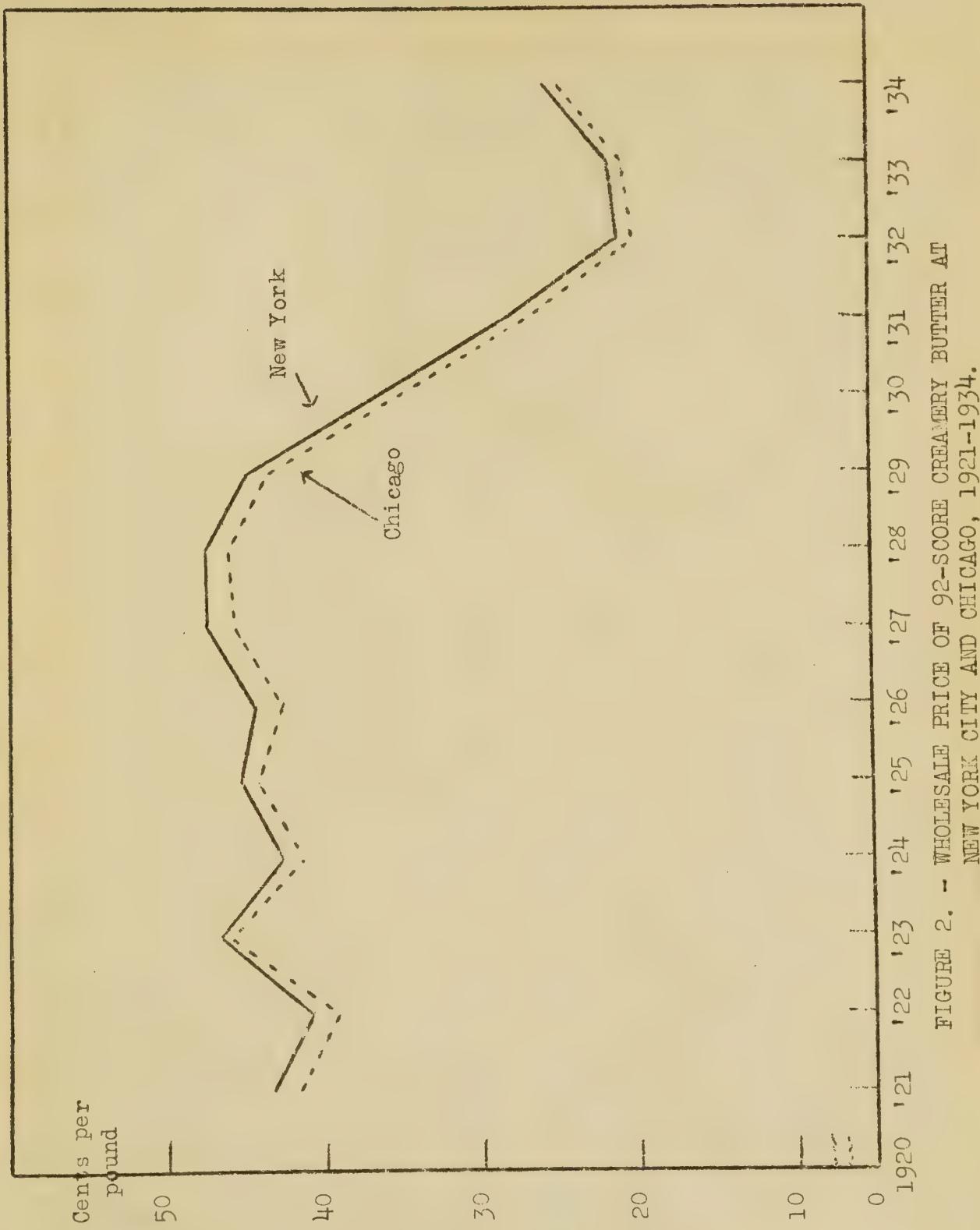


FIGURE 2. - WHOLESALE PRICE OF 92-SCORE CREAMERY BUTTER AT NEW YORK CITY AND CHICAGO, 1921-1934.

Cents per
pound

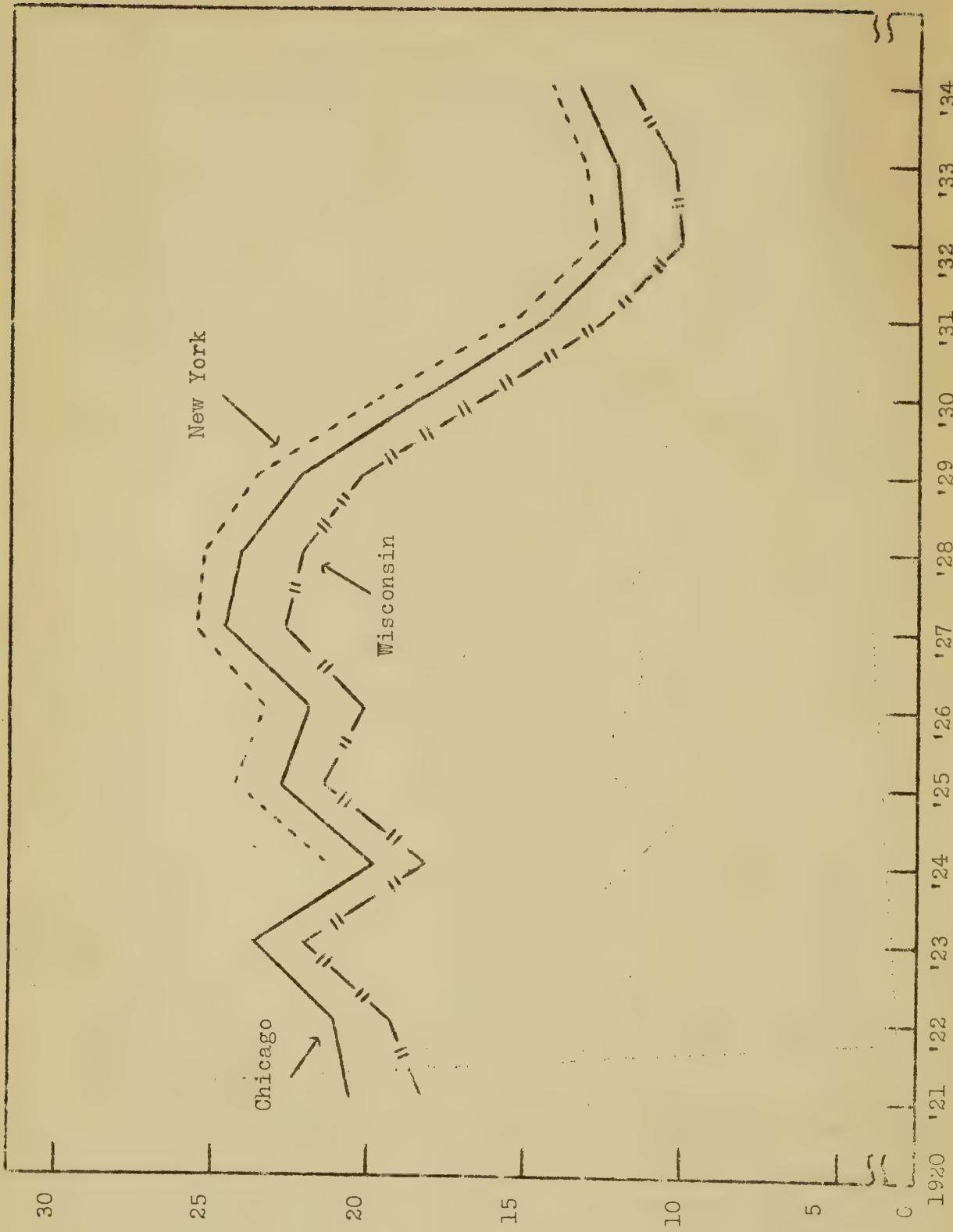


FIGURE 3. - WHOLESALE PRICES OF AMERICAN CHEESE - NEW YORK SINGLE DAISIES, CHICAGO SINGLE DAISIES, AND WISCONSIN TWINES (ON THE WISCONSIN CHEESE EXCHANGE), 1921-1934.

Percent

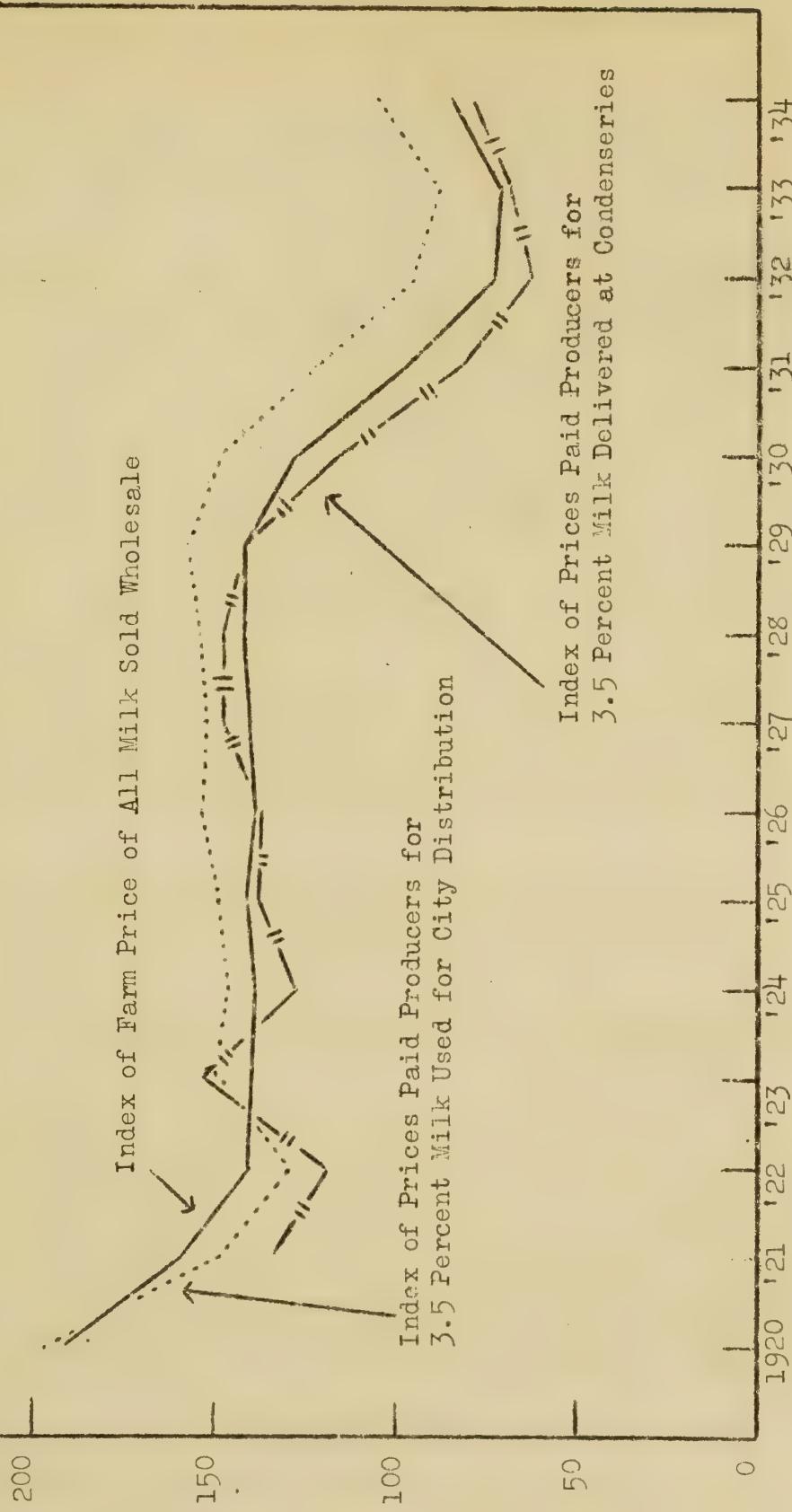


FIGURE 4. - INDEX NUMBERS OF FARM PRICES FOR ALL MILK SOLD WHOLESALE, INDEX NUMBERS OF PRICES PAID TO PRODUCERS FOR 3.5 PERCENT MILK DELIVERED AT CONDENSERIES, AND INDEX NUMBERS OF PRICES PAID BY MILK DEALERS FOR MILK TESTING 3.5 PERCENT BUTTERFAT, USED FOR CITY DISTRIBUTION AS MILK AND CREAM, UNITED STATES, 1920-1934. (1910-1914 = 100)

Part II

THE PRICE STRUCTURE FOR MILK WITHIN A MILK SHED

The terms under which milk is sold vary widely between markets. In some markets, usually small markets located within a surplus area or with few or no sanitation requirements, producers receive the same price f.o.b. the market for all milk, regardless of whether it is used for fluid milk, cream or manufactured dairy products. In other markets, while producers receive the same price for all milk sold, this price is a weighted average price which is computed by adding together the value of milk sold to distributors in accordance with a schedule of the prices for milk used for various products, and dividing the total sum so computed by the total volume of sales to distributors. In still other markets, producers receive two or more different prices for different portions of the milk which they deliver, a weighted average price for that portion of their milk sold as fluid milk and cream, and a lower price on the remainder, which is used in the production of manufactured dairy products. Again, producers may receive one price for that portion of their milk sold as fluid milk, another price for that portion sold as fluid cream, and still another price for that portion which is used in the production of manufactured dairy products such as butter, evaporated milk and cheese.

In this section, the relationships between the prices of milk used for different purposes f.o.b. city, and the farm price structure arising therefrom, are examined in some detail.

A. The price structure; uniform quality requirements - centralized processing.

For purposes of presentation, the price structure is examined in a hypothetical market, wherein factors operating to establish a differentiation in the prices of milk used in the production of different dairy products are assumed to be non-existent. One by one the factors operating to establish such differentiation in the prices of milk used in the production of different dairy products are considered, and thus the analysis of the price structure progresses from that of the highly simplified hypothetical market toward that of the most complex type of market. For purposes of analysis, therefore, it is assumed that:

1. There is a freely competitive market.
2. Local delivery costs and labor are the same for all classes of product.

3. There is no variation in the volume of milk consumed in different forms.
4. All milk, whether sold to consumers as fluid milk or other dairy products, is of uniform quality.
5. All milk is brought to the city in fluid form, there to be processed into the various dairy products.
6. There is no variation in the volume of milk sold per farm from day to day.

Under the conditions noted above, it is obvious that producers would receive the same per unit price for all milk brought to the market since each unit of the supply is interchangeable with every other unit. This would be true regardless of whether the milk were sold to the consumer as fluid milk, fluid cream, or manufactured dairy products.

However, it is well recognized that the butter and other manufactured dairy products equivalent of a unit of milk can be transported long distances at very low cost per product equivalent of a unit of milk as compared to the cost of transporting a unit of milk the same distance, and can be kept in storage for a relatively long period of time without appreciable deterioration in quality. Manufactured dairy products are composed largely of milk solids, or, stated differently, they are composed of one or more of the constituents of milk concentrated to a very much greater degree than in whole milk. Thus it is more economical to produce the finished product, such as butter, cheese, etc., at a distance from the market and transport the finished product to the market, rather than to transport whole milk to the market and there process it into the finished product (unless, of course, the demand for all the products of milk in the market can be satisfied from the volume of milk produced in the area immediately surrounding the market). For example, one hundred pounds of butter contain approximately 80 pounds of butterfat, and one hundred pounds of 3.5 percent milk contain 3.5 pounds of butterfat. Assuming that transportation costs per one hundred pounds of product are equal, the cost of transporting butterfat in the form of butter and in the form of 35 percent cream would be about $1/23$ and $1/10$, respectively, of the cost of transporting butterfat in the form of milk. The reasons given above suffice to explain why manufactured dairy products are produced, in many cases hundreds of miles from the market, and shipped to the market in finished product form rather than being shipped to the market in the form of fluid milk and there processed into the finished product.

B. The price structure; uniform quality requirements - decentralized processing.

For the purpose of considering the manner in which the transportation factor affects the price structure for milk within a milk shed, the preceding assumption that all milk is brought to market, there to be processed into the several milk products, is now dropped and, instead, in addition to the remaining assumptions noted previously, it is assumed that:

1. All the milk which is produced within 100 miles from the market is needed to satisfy the demand for fluid milk.
2. All the milk which is produced in the area between 100 and 150 miles from the market is needed to meet the demand for fluid cream.
3. All the milk which is produced within the area between 150 and 200 miles from the market is needed to meet the demand for evaporated milk.
4. All the milk which is produced within the area between 200 to 400 miles from the market is required to meet the demand for butter.
5. Transportation costs vary in direct proportion to distances at the following rates per unit per mile:
 - (a) Whole milk - 1 cent per hundredweight.
 - (b) The cream equivalent of 100 pounds of 3.5 percent milk - 0.2 cent.
 - (c) The evaporated milk equivalent of 100 pounds of 3.5 percent milk - 0.1 cent.
 - (d) The butter equivalent of 100 pounds of 3.5 percent milk - .05 cent.
6. The farm value of skim milk exactly equals the cost of separating cream from milk.
7. The f.o.b. city value of the butter equivalent of 3.5 percent milk (it is assumed that the over-run is necessary to cover the manufacturer's margin) is \$1.00.

Under the above assumptions the f.o.b. city prices that must be paid for milk in order to secure the volume necessary to meet the demand for milk, as well as the f.o.b. city prices that must be paid for the cream equivalent and evaporated milk equivalent of 100 pounds of milk to

meet the respective demands, can be readily computed. Thus, with the f.o.b. market price of the butter equivalent of 100 pounds of 3.5 percent milk at \$1.00, the farm price of 100 pounds of milk which is converted to butter at a point 400 miles from the market is \$1.00 less the cost of transporting the butter equivalent of 100 pounds of such milk to the market, or 80 cents ($\$1.00 - (400 \times \$0.0005) = \$0.80$). At a point 200 miles from market the farm price of milk used for butter is 90 cents ($\$1.00 - \$0.10 \text{ transportation costs} = \0.90). If milk is to be used in the production of evaporated milk at a point 200 miles from the market, the farm price of such milk must be 90 cents per hundredweight or else farmers will sell their milk to butter manufacturers rather than manufacturers of evaporated milk. The f.o.b. city price of the evaporated milk equivalent of 100 pounds of 3.5 percent milk will be the farm price of 100 pounds of 3.5 percent milk at a point 200 miles from the market, plus the cost of transporting the evaporated milk equivalent of such milk to the market, or \$1.10 ($\$0.90 + \$0.20 = \1.10). Similarly, the farm price of milk used to produce cream at a point 150 miles from the city must be equal to the farm price of milk used to produce evaporated milk at that point, else farmers will sell their milk for use in evaporated milk rather than cream, and the f.o.b. city price of the cream equivalent of 3.5 percent milk will be the farm price of such milk at a point 150 miles from the market plus the cost of transporting the cream equivalent of 100 pounds of 3.5 percent milk from that point to the city, or \$1.25 ($\$0.95 \text{ farm price at 150 mile-point} + \$0.30 \text{ transportation costs to market} = \1.25). Similarly, the f.o.b. city price of 3.5 percent milk will be the farm price of milk used for cream at a point 100 miles from the market plus the cost of transporting fluid milk to the market, or \$2.05 ($\$1.05 \text{ farm price at 100 mile-point} + \$1.00 \text{ transportation costs to market} = \2.05).

Therefore, under the conditions assumed the prices for milk and milk products f.o.b. city would be as follows:

1. Fluid milk - \$2.05 per hundredweight.
2. The cream equivalent of 100 pounds of 3.5 percent milk - \$1.25.
3. The evaporated milk equivalent of 100 pounds of 3.5 percent milk - \$1.10.
4. The butter equivalent of 100 pounds of 3.5 percent milk - \$1.00 (assumed, but of course a different price f.o.b. the market for the butter equivalent of 100 pounds of 3.5 percent milk would be associated with different prices for the other milk products than those computed above).

Under the conditions assumed it is also obvious that milk would not be shipped to the city to be processed into the several dairy products

(except in case of error or lack of knowledge with respect to the most profitable channel of disposal, which is not possible under the assumptions set forth). Prices in the city would be quoted for milk, cream, evaporated milk and butter. All milk brought to the city would command one price, cream another, etc. Thus, there would be no differentiation in milk prices f.o.b. city.

The farm price for milk at any given point within any particular zone is, of course, equal to the farm price of milk at the outer edge of the zone plus the difference between the cost of shipping milk in the particular form to the market from the outer limit of the zone and the cost of shipping such milk from any given point within the zone. The farm price structure for milk that would obtain under the conditions set forth above is shown in Figure 5.

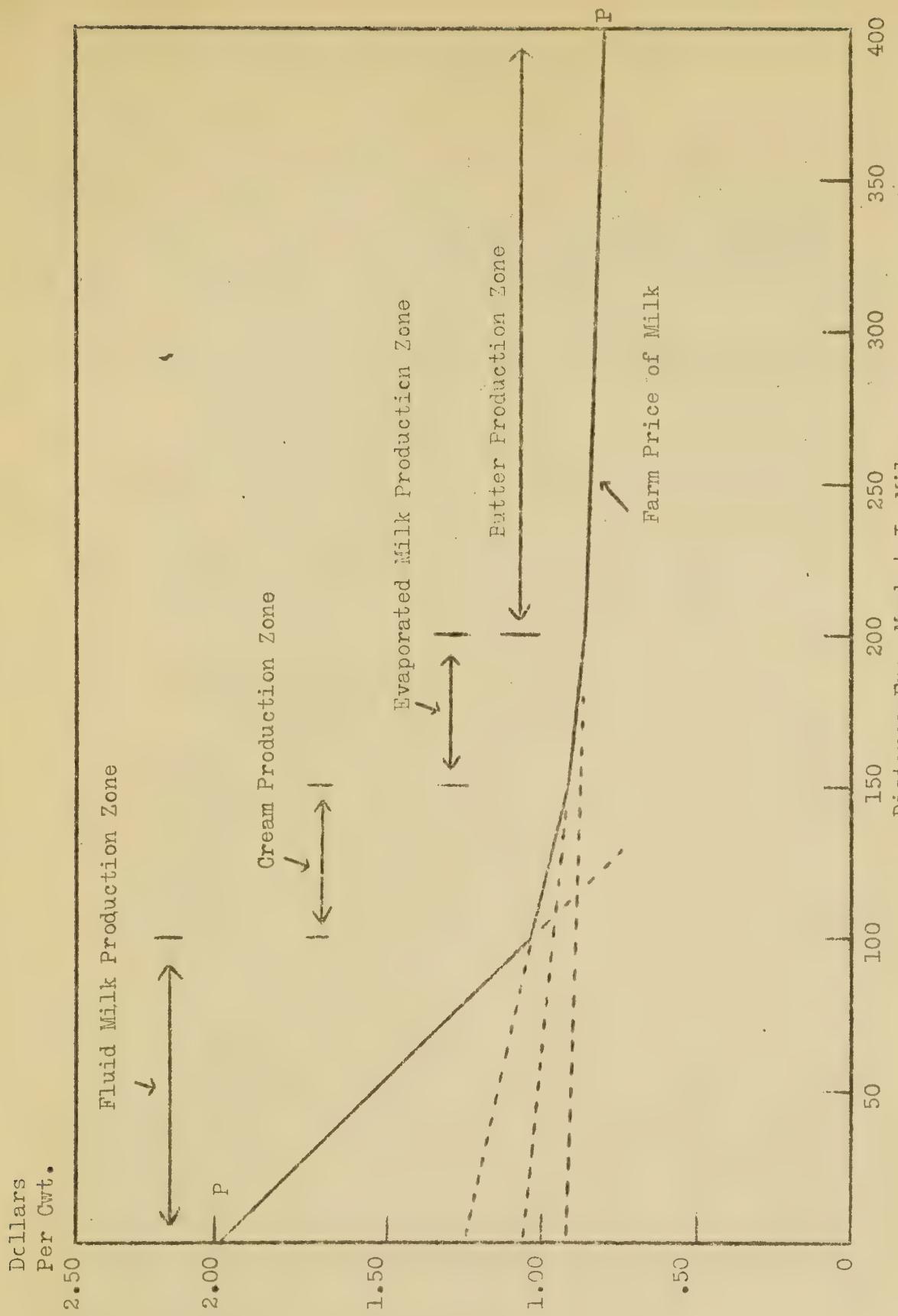
C. The price structure; varying quality requirements - decentralized processing.

If the assumption that all milk is of uniform quality is discarded, and it is assumed that the quality requirements for milk used in the form of fluid milk and cream are higher than those for milk used in the production of evaporated milk and butter, then the type of market under analysis is somewhat more comparable to the rather complex type of milk market now obtaining in many large urban areas.

Sanitation requirements vary somewhat between milk markets. Usually, the requirements cover such items of sanitation as periodic veterinary examination of cows, cleanliness of cows, cleanliness of dairy barns in addition to specifications with respect to the type of flooring, light, etc., specifications with respect to the type and care of the milk house, cleaning and care of utensils, and rules and regulations pertaining to milking and handling of the milk.

It should be obvious that the sanitation requirements under which milk for fluid milk and cream is produced, which in by far the larger number of cases are more stringent than the sanitation requirements under which milk for manufacturing purposes is produced, operate to increase the cost of producing milk for use as fluid milk and cream relative to the cost of producing milk for manufacturing purposes. Thus, over a period of time, the supply price ^{3/} of a given volume of milk used for fluid milk and cream will be somewhat higher than the supply price of the same volume of milk used for manufacturing purposes, other factors remaining constant. Of course, the difference between the supply prices of milk produced for use in different products in any milk supply area, other factors being the same, will depend upon the differences in the sanitation requirements applicable to milk produced for use in the different products. If it were assumed that sanitation requirements raise

^{3/} The price that must be paid in order that a given volume of milk of the desired quality be forthcoming.



F.O.B. Market Prices for Specified Products
Equivalent of 100 pounds of 3.5 Percent Milk

FIGURE 5. - PRODUCTION ZONES AND FARM PRICE STRUCTURE, FOR SPECIFIED DAIRY PRODUCTS AS DETERMINED BY THE TRANSPORTATION RATE STRUCTURE

the supply price of milk for use as fluid milk and cream 20 cents per hundredweight per farm above the supply price per hundredweight for milk used for manufacturing purposes, the price structure under the assumed conditions would be similar to that set forth in Figure 6 (a position of stable equilibrium is assumed, so that the f.o.b. city prices that prevail, and the farm price structure arising therefrom, are normal supply prices).

Under the conditions assumed, the prices for milk and milk products f.o.b. city would be as follows:

1. Fluid milk - \$2.25 per hundredweight.
2. The cream equivalent of 100 pounds of 3.5 percent milk - \$1.45.
3. The evaporated milk equivalent of 100 pounds of 3.5 percent milk - \$1.10.

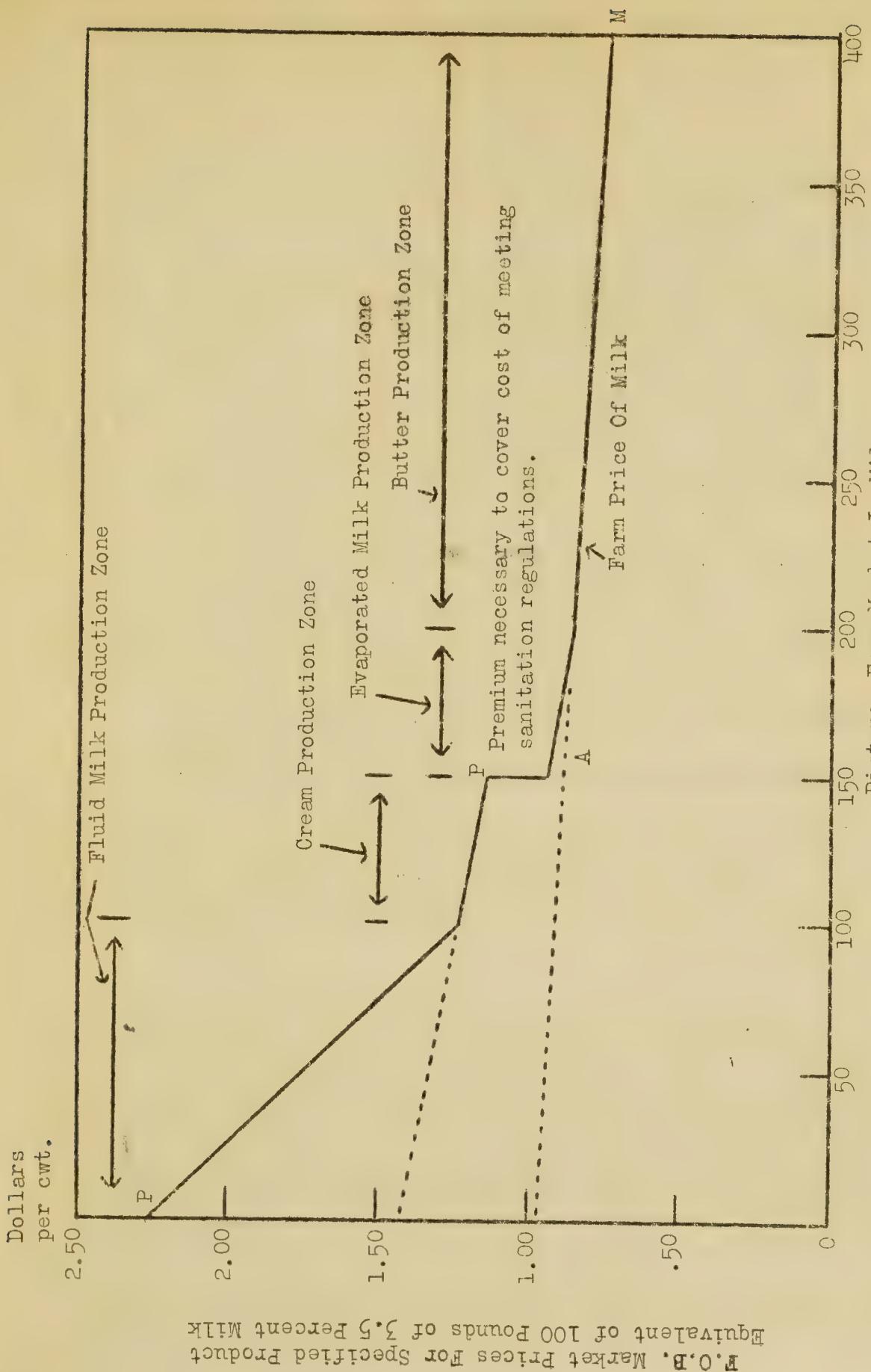


FIGURE 6. - PRODUCTION ZONES AND FARM PRICE STRUCTURE FOR SPECIFIED DAIRY PRODUCTS AS DETERMINED BY THE TRANSPORTATION RATE STRUCTURE AND SANITATION REGULATIONS FOR FLUID MILK AND CREAM.

4. The butter equivalent of 100 pounds of 3.5 percent milk - \$1.00.

In Figure 6, the line PP represents the farm price of milk used for fluid milk and cream; the line AM the farm price for milk used in the production of evaporated milk and butter. It should be noted that as yet no factor has been introduced that will operate to establish different prices for milk f.o.b. the city. Under the assumed conditions, all milk produced within a particular zone will be used in the production of the same product. Thus, no milk will be shipped to the market as milk from the cream zone, etc. Stated differently, there will be no differentiation between the price of milk based on the form in which such milk is sold f.o.b. city. Also, no factor has been introduced that will operate so that individual producers will receive different prices for different portions of their milk. Producers within each zone will sell all of their milk at one price. Farm prices in a particular zone will vary as transportation costs from different points in the zone to the city vary, and will vary between zones because of differences in transportation costs of milk and the product equivalent of milk, and because of differences in cost of producing milk engendered by differences in the sanitation regulations applicable to milk and milk products.

D. The price structure as affected by type of transportation. ^{4/}

It should be emphasized that the foregoing treatment of the effects of the transportation rate structure and sanitation requirements on the price structure for milk has been greatly simplified for purposes of presentation. Variations in the transportation rate structure and sanitation regulations from those assumed bring additional complexities into the price structure.

One of the assumptions on which this analysis has been based so far is that transportation rates vary according to distance and weight only. However, several factors influence transportation costs, the more important of which are type of transportation (truck, tank car and railroad), complementary services, topography of country, volume, labor conditions, gasoline and truck costs, and local transportation arrangements. Some attention will be given to the effect of these various factors on the price structure and size of sheds for the different types of dairy products.

^{4/} This section is based largely upon a report prepared by Dr. J. M. Tinley, formerly Principal Agricultural Economist, Dairy Section.

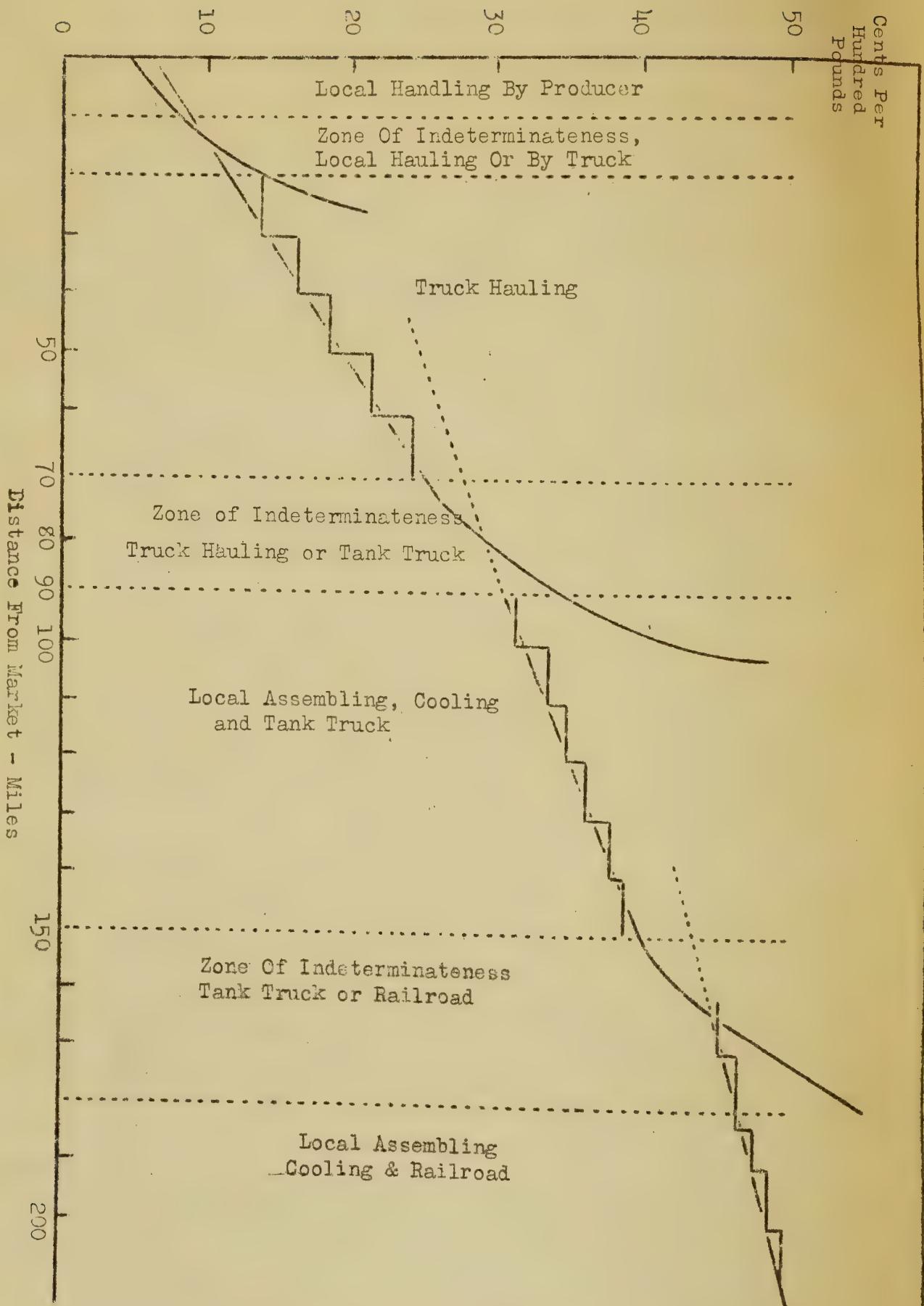
1. Type of Transportation. From points relatively close to a market, producers frequently find it advantageous (or less costly) to transport their own milk to the city. Many producers use small trucks to transport feed, implements, etc., from the city to their farms or from one part of the farm to another and find it convenient to take their milk direct to a city plant. The farmer or a member of his family operates the truck and because of proximity to the city can reduce operating costs per cwt.-mile to a very low figure. However, as distance from the city increases, operation of a small truck per hundredweight milk increases rapidly. A large load becomes more economical so larger trucks are used. Few farmers have sufficient milk to supply a load for a large truck, so either a distributor, a private agency (hauler) or a cooperative association operates a truck and collects milk from several farmers.

After a certain distance varying between, say, ten and sixty miles, depending upon the topography, density of supply, etc., truck transportation becomes too expensive per hundredweight mile. It is expensive to operate a large truck (or truck and trailer) over country roads especially as production often becomes more scattered as distance from a city increases.

Under these conditions, milk is usually hauled by producers or by truck to a centralized country assembling point, cooled and loaded into a tank truck and hauled into the city. Also, there are definite limits to the distance from which milk can be hauled by tank truck. In some of the larger markets, milk is collected at country stations and cooled, and then shipped by train to the consuming center. In a few instances, milk is processed and bottled at a country point and shipped into the city for distribution.

In Figure 7 are shown, hypothetically, the transportation costs on milk into a large consuming center.^{5/} For the first ten miles, milk producers will haul their own milk, the lowest cost being five cents a hundred pounds (most of which is for handling costs). The total cost rises as distance from the consuming center increases, but after about fifteen miles, costs rise very rapidly. There is a zone in which milk may either be handled by the producer or by truck. From about twenty miles, however, it becomes more economical to haul by truck. This is probably true up to about seventy miles. From seventy to ninety miles is another zone of indeterminateness in which milk may be hauled either by truck (in cans) or assembled and hauled in tank truck.

5/ The variations here discussed are not considered in later Figures. Therefore, a different set of rates has been assumed, under which the differences in rates have been magnified.



1/ See text for assumptions on which diagram is based.

FIGURE 7. - THE INFLUENCE OF TRANSPORTATION RATE STRUCTURE UPON THE PRICE STRUCTURE FOR MILK 1/
PRICE STRUCTURE FOR MILK 1/

From ninety to one hundred and fifty miles, milk will be hauled in tank trucks, but for greater distances the time of hauling and load limitation would tend to make it more economical to assemble milk at a country plant and transport milk to city by train. There is a zone of indeterminateness from 150 to 180 miles in which milk may be hauled either by tank car or by railroad.

These distances would vary from market to market depending upon topography, state of roads, density of supply, relative costs of different methods of transportation, etc.

Transportation rates are commonly set on the basis of zones, under which rates, instead of increasing directly in proportion to distance, increase in a series of steps as is shown in Figure 7.

2. Complementary Services. Transportation rates usually include some elements of cost other than mere hauling. Milk has to be loaded and unloaded, iced or refrigerated. These are usually more or less fixed costs and do not vary with the length of haul. Thus the longer the distance hauled the lower these costs become per mile, resulting in a tendency for transportation rates per unit to decline as distance increases.

There is somewhat greater risk in hauling milk than in hauling butter -- milk has to be handled with more care and speed. For this reason a particular transportation agency may charge a higher rate for hauling an equal volume or weight of fluid milk than for butter or evaporated milk.

3. Rate Schedules. Many transportation agencies, especially railroads, do not arrange their rate schedules by miles, but by zones. It is thus possible that the rate will be the same on milk hauled 101 miles and 120 miles.

4. Topography of Country. Transportation costs per mile are usually somewhat higher in mountainous and hilly country than in flat, level country. This is due to the fact that more fuel is consumed, fuel costs are themselves high, there is more strain on vehicles and speed is greatly reduced. The condition of the roads is also important. Narrow, winding roads greatly reduce the speed of trucks and to a certain extent regulate the type of trucks that can be used.

5. Volume of Milk. Where dairies are small and scattered, the costs of collecting milk are considerably higher than where production is more concentrated. Frequent stops to pick up small quantities of milk and a long distance between stops materially increase hauling costs.

Railroads usually charge different rates, depending upon whether the commodity is hauled in carlot or less than carlot units.

6. Labor Conditions. An important part of hauling costs is the expenditure for truck drivers and mechanics. In cities where labor is cheap, rates may be somewhat lower than where wages are high.

7. Gasoline and Trucks. The prices of gasoline, oil, trucks and spare parts vary considerably in different parts of the country. This may have a material influence on hauling costs in different localities.

8. Control of Hauling. In some markets, all transportation is handled by one agency or by not more than two or three agencies. This reduces overlapping of routes to a minimum and should result in lower unit operating costs. In other markets, each producer or each distributor undertakes to make his own hauling arrangements. In such markets, a great deal of overlapping may occur. Efficient use is not made of transportation facilities, and consequently rates will tend to be higher than where there is centralized control of hauling.

The foregoing serves to indicate some of the factors that affect the transportation rate structure for milk.

E. The price structure as affected by the type of sanitation regulations.

Some of the factors that must be taken into account in determining how sanitation requirements affect the price structure for milk in different milk sheds and for a particular shed are as follows:

(1) The sanitation regulations in force in the milk shed. Sanitation regulations are much more stringent in some markets than in others. There is, therefore, no possibility of developing a generally applicable cost figure which could be applied to the price structure for milk within a particular market and used in the practical determination of milk prices within a particular milk shed.

(2) The cost of meeting sanitation regulations, even though the regulations are the same in some markets as in others, may be widely different. Labor and material prices may vary materially between different markets, so that, even though the regulations may be exactly the same between particular markets, the cost of meeting the sanitary regulations may vary materially.

(3) In addition, health and sanitation regulations may be of such nature as to permit only those producers located relatively near the market to qualify as fluid milk producers. For example, the imposition

of a regulation requiring that fluid milk shall be delivered to the consumer within a given number of hours from the time it is produced would automatically set a maximum distance over which milk could be transported and might reduce materially the area from which fluid milk could be shipped to the market. In this case the price for fluid milk would increase until consumption was reduced, or until production within the area was increased, or both, to the point where the market would just use the milk produced within the new zone. This, of course, would increase the price spread between fluid milk and the product equivalent of milk used in other dairy products f.o.b. the market, and would increase the farm prices of fluid milk relative to the farm price of milk used in the production of other dairy products.

Also, sanitation regulations may not increase the costs of meeting the sanitation regulations by the same amount per unit of product on all farms. Some farms are better equipped than others and hence have smaller additional expenditures to meet requirements. Large dairies can ordinarily utilize equipment more economically and, therefore, their cost per unit for milk houses, cooling equipment and other outlays commonly required by health and sanitation regulations is lower. Such dairies have their competitive position improved by the raising of inspection requirements and may increase their production. Others may tend to shift to cream, or butter production, rather than make the additional outlays necessary. Depending upon these effects on supply, zones from which the various products are shipped to the market may be either enlarged or reduced by the imposition of or changes in the sanitation regulations.

While this discussion of the price structure has been developed entirely in terms of transportation costs and costs of meeting health and sanitation requirements, it should be apparent that variations in costs resulting from other causes will work out in practically the same manner. The important distinction is between the effects on the price structure of those costs which vary with distance from market, as does transportation, and costs which are likely to be rather uniform regardless of distance from the city. The influence of each of these types upon the price structure for milk is illustrated in a general manner by this analysis of transportation costs and costs of meeting health and sanitation regulations.

Variations between farms, such as those due to available equipment, type and condition of herds, type of land, labor supply and even personal preferences, will partially determine which farmers will produce milk for the various uses. Also the relative significance of these latter factors becomes greater as class differentials become smaller near the boundaries of zones. Therefore, their principal effect

is to cause the boundaries between the areas in which the several classes are produced to be less clearly defined than would be indicated by the simplified example set forth in the analysis.

(4) Also, there are higher sanitation regulations for fluid milk than for cream in some markets. This operates to establish higher supply-prices for milk produced for use as fluid milk than for milk produced for use as fluid cream.

The foregoing serves to indicate in a general way the manner in which sanitation regulations affect the price structure for milk within a milk shed, and how differences in the sanitation regulations may affect the price structure in different milk sheds.

F. The price structure; decentralized processing - uniform quality requirements - variations in production.

The manner in which the transportation rate structure and sanitation regulations affect the price structure for milk within a milk shed has been set forth in some detail in the preceding pages. In order to approach more nearly the price structure for milk as it actually exists in many milk markets consideration will be given to the price structure under the conditions that prevail when the assumption that there is no variation in production is dropped.

There are marked variations in the production of milk, which are perhaps most easily classified on the basis of time periods, such as day to day, week to week, year to year, and long time variations. There is some day to day variation in production, although this type of variation is undoubtedly negligible. The seasonal variation that takes place in milk production within most milk sheds ^{6/} is marked, production in the fall and winter months usually being much less than production in the spring and summer months. This type of variation is due largely to such factors as (1) the greater supply of succulent feed available during the pasture season, (2) time of freshening of cows, (3) inclement weather during the winter months, etc. In some areas, the seasonal variation in production is much more extreme than in others ^{7/} and even within the same area, production often shows a more marked seasonal variation in some regions than others within the area.

Year to year changes in production are due to such factors as (1) differences in feed production conditions that are associated generally with differences in weather and growing conditions, (2) shifts into and out of the dairy business due to changes in the relative

^{6/} Ross, H. A., Cornell University, Agri. Exp. Station Bulletin No. 527; also based on production data secured with respect to the markets operating under Federal milk licenses.

^{7/} Based on production data secured with respect to the markets operating under Federal milk licenses.

profitableness of milk production as compared to other types of agricultural production, (3) other factors that may operate intermittently, such as the imposition of a sanitary regulation to the effect that all milk sold in the market as fluid milk and cream must come from cows free from tuberculosis, which may operate to cause a marked decrease in the number of milk cows within the area, reduce production within the area quite markedly for a short period, and necessitate a temporary increase in the size of the milk shed.

Cyclical and long-time changes in production are probably associated with long time trends in demand, such as changes in the consuming habits of the people, the ebb and flow of population in urban centers and other factors such as changing opportunity cost relationships and type of farm organization and operation which set the limits of expansion of production within a given area, etc.

Seasonal variation is one of the most important types of variation in production. For purposes of presentation, therefore, the manner in which seasonal variation in production affects the price structure for milk within a milk shed is considered, with all other types of variation in production noted above held constant.^{8/}

For most milk markets the volume of milk sold to consumers as fluid milk and cream varies somewhat from season to season, but the production of milk varies much more seasonally. Thus, during the period of low production, the production of milk within a milk shed may be just sufficient to meet market requirements (an amount about ten percent in excess of average daily sales), while during the season of flush production the volume of milk produced within the milk shed is usually far in excess of market requirements.

For purposes of presentation, it is assumed that (1) during the period of low production the volume of production within the 100-mile zone (see Figure 5) is equal to market requirements for fluid milk, (2) the sanitation regulations are the same for all milk regardless of the form in which it is sold, (3) production varies seasonally, (4) there is no difference between the seasonal production curves of individual producers, and (5) there are no variations in consumption other than daily. Under these conditions, there are several lines of procedure which distributors might follow with respect to purchasing milk from producers, such as (1) expanding and contracting the area from which milk is secured inversely to the expansion and contraction of milk production, (2) taking all the supply of milk produced within a given area (wherein the supply during the period of low production is just sufficient to meet the market requirements for fluid milk)

8/ For ease in presentation, the examples used to explain certain points are stated in terms of fluid milk only throughout the remainder of this paper. The same treatment is applicable in a general way to other dairy products.

and paying producers prices low enough to enable distributors to secure a high enough margin on fluid milk to cover the losses incurred in handling manufacturing milk during the period when supplies are larger than fluid requirements, or (3) purchasing milk from producers under a price arrangement which encourages producers to produce an even volume of milk throughout the year.

If distributors elected to secure their market requirements for fluid milk by contracting and expanding the area from which they draw their supplies inversely to the seasonal variation in production, refusing to take the production of distant shippers during the season of low production, the zones from which fluid milk would be drawn at different periods of the year would show marked difference from that shown in Figure 5. If, during the period of low production the volume of milk produced in the area within 100 miles of the market were sufficient to meet fluid requirements, the volume of milk produced within this zone would be far in excess of fluid requirements during the period of heavy production. For example, if the volume of milk produced during the peak production period were 40 percent above that produced in the low production period, the milk shed would be markedly contracted, about 40 percent in area if the density of production were constant throughout the area, but more than this if, as is often the case, the density of milk production declines as distance from market increases.

Assuming that the price of milk during the low production period were \$2.05 f.o.b. city, and the farm price structure the same as that indicated in Figure 5, the f.o.b. market price during the period of high production would be less than the f.o.b. market price during the season of low production by an amount equal to the saving in transportation costs involved in securing the supply of milk closer to the market during the flush period, and would vary between these limits during the year, depending upon the extent of the area wherein the volume produced was needed to meet fluid requirements. The farm prices would vary in the same manner, being equal to f.o.b. market prices less the cost of transporting milk to the city.

There are several factors, however, that operate to cause distributors to secure their milk from the same area throughout the year, rather than expanding and contracting the geographical scope of their operations to secure only that milk needed to meet fluid milk requirements. It is a matter of grave concern to the distributor that he be assured of a volume of milk sufficient to meet his market needs. Therefore, the risk involved in dropping a source of supply during the season of flush production, when it is practically certain

that that source will be needed during the season of low production, is a factor operating to check such action, since the distributor can never be certain that some competitor will not immediately furnish the shippers he dropped with an outlet for their milk, thereby forcing him to seek even more distant sources of supply during the season of low production.

Another factor of importance in this connection is that related to the costs of procuring milk from a rather constant area, as compared to the cost of procuring milk from an area that varies markedly throughout the year both in geographical extent, and the number of individual sources of the raw material. It undoubtedly costs less to procure milk from an area that stays rather constant with respect to geographical extent and number of producers, than from an area that varies markedly throughout the year in geographical extent and number of producers. Some of the savings are: (1) there are fewer field men needed to contact producers and secure their patronage, (2) bookkeeping and office expense is lower due to the fewer number of producers for whom accounts must be kept, statements must be prepared, and to whom payments must be made, (3) fewer laboratory tests have to be made, resulting in savings in laboratory technician labor costs, laboratory supplies, etc., (4) fewer individual containers have to be handled, involving savings in receiving labor, can washing, and sampling, and (5) there is less cost involved in furnishing various services to producers. It appears, then, that distributors can afford to pay producers a premium for evenness of production, so that they may, through the payment of such premium, secure the volume of milk needed by them to meet their fluid milk requirements from an area smaller in extent geographically, and in numbers of individual sources of supply, rather than securing their supply from an area that contracts and expands markedly as production decreases and increases seasonally. The amount of the premium distributors can afford to pay in this connection is the difference in the costs of procuring their milk supply from an area that remains practically constant in geographical extent and in number of individual sources of supply, and the cost of procuring milk from an area that varies markedly in geographical extent and the number of producers from whom milk is purchased.

There is another factor that exerts a tendency to cause the distributor to pay producers a premium for evenness in production. It has been pointed out previously that a volume of milk perhaps 10 percent in excess of average daily sales must be brought to market to meet daily variations in the volume of milk sold to consumers as fluid milk. In order to handle this volume of excess milk, which might be termed the daily operating reserve, the distributor has to integrate a by-product

enterprise with the main enterprise, or find some other channel of disposal. However, as far as this operating reserve is concerned, it is of such constant volume^{2/} that efficient methods of disposal as manufactured products can be developed. It is the marked variation in the seasonal excess and the difficulty of handling it efficiently that is an important factor in leading distributors to endeavor to secure a more even volume of supplies. This arises because more efficient methods of handling the excess can be developed when the supply is constant than when it varies markedly. Thus, during the season of flush production the distributor has to convert to other uses, or someone else does it in his stead, a volume of milk that may be several times as great as the volume so converted during the season of low production. This may be demonstrated by reference to some assumed figures, as follows:

1. The volume of milk sold daily as fluid milk throughout the year is 10,000 pounds.

2. The volume of milk brought to market is 11,000 pounds (10 percent of average daily sales needed to meet daily variations in fluid milk sales) in the season of low production and 14,000 pounds during the season of flush production.

The volume of milk that is diverted to uses other than fluid milk is therefore 1,000 pounds per day during the season of low production and is 4,000 pounds per day during the flush period, or 3,000 pounds greater than during the low period. This is entirely a seasonal excess (3,000 pounds of the 4,000) and represents an increase in the output of products other than fluid milk of 300 percent. Of course, under actual conditions, the increase in the volume of milk diverted to uses other than fluid during the flush season will be dependent upon the actual seasonal variation in production, which will, in some cases, be greater, and in other cases less, than indicated in the above example.

The seasonal excess in production therefore raises serious questions as to how it may be handled efficiently. It undoubtedly costs far more to handle a volume of excess milk that fluctuates markedly from season to season, as does a seasonal excess, than it costs to handle a volume of excess milk that remains rather constant from season to season. This is due to the fact that equipment, and in many cases labor, must be available to handle a peak load far in excess of the load during the period of low production when only a small volume of milk, equal to about 10 percent of average daily sales,

2/ Assumed, but practically all available data indicate that it is actually quite constant.

is converted to uses other than fluid milk. The distributor, therefore, can afford to pay a premium for evenness of production in addition to that already noted, the size of the premium being approximately equal to the difference in costs involved in handling a constant volume of excess (the operating reserve) as compared to handling a widely fluctuating volume of excess milk (the seasonal excess).

The foregoing indicates that distributors are able to pay a premium for evenness in production. It appears that it would be a matter of indifference to distributors whether they paid a given sum of money, including premiums for evenness of supply, to secure a particular volume of milk, or paid a sum of money about equal to the former for a similar volume of milk, the latter sum, however, being paid partly to producers delivering an uneven volume of milk, and partly for extra costs involved in procuring milk from an irregular area. In the former case, the farmer gets a higher percentage of the total volume of money expended for milk purchases and operating costs by the distributor than in the latter case, but total costs to the distributor remain about the same. It is probable that it is a matter of indifference to distributors whether they pay out a given sum of money in the one manner or the other. If distributors elect to secure their milk supply without paying producers a premium for evenness in production, it is evident that the seasonal variation in producers' prices would be quite marked.

It is, obviously, more economical to secure milk that is to be sold as fluid milk from sources near the market and to process the seasonal excess into milk products other than fluid milk at points outside the area wherein production is just necessary to meet fluid requirements, since the cost of transporting the fluid milk equivalent of manufactured dairy products from any given point is much greater than transporting such products to market in finished form. Of course, the extent of the saving will depend upon the size of the area and the like. Thus, during the period of flush production, fluid milk would be drawn from a point much nearer to market (depending upon the seasonality in production and relative density of production throughout the area) than during the season of low production. F.o.b. market prices for fluid milk during the year would vary directly with differences in costs of transporting milk from different points within the area. Thus, if milk is transported only 50 miles during the flush period and 100 miles during the low period, f.o.b. market prices, assuming transportation costs of 1 cent per hundredweight per mile, would vary within a 50-cent range during the year, being 50 cents higher during the period of low production than in the period of high production. Farm prices would vary in the same manner, being equal to f.o.b. market prices less transportation costs.

If, however, milk is brought to the market in fluid form and is then diverted to more concentrated forms such as cream, evaporated milk and butter, the product equivalent of such milk will sell at prices f.o.b. the market equal to the price at which the product can be shipped to the market from distant areas. Thus, if the butter equivalent of milk can be brought to the market from distant sources for \$1.00 f.o.b. the market (farm price plus transportation costs on the butter equivalent of 100 pounds of milk), the butter equivalent of milk brought to the city in fluid form will sell for only \$1.00 f.o.b. the market. The farm price of such milk would be materially less than \$1.00 per hundredweight. For example, if milk is shipped 50 miles and transportation costs are 1 cent per hundredweight per mile, the cost of transporting a hundredweight of such milk is 50 cents. If the product equivalent of such milk sells for \$1.00 f.o.b. the market, then the farm price of such milk would be 50 cents. Of course, if such milk is shipped any great distance as fluid milk, the product equivalent f.o.b. the market may not sell for enough to cover transportation costs from the farm to the market. Therefore, if milk is shipped to the market in fluid form for any appreciable distance and then converted to more concentrated products, farm prices for fluid milk are decreased appreciably. Under these conditions the seasonal variation of prices paid producers would be much more pronounced than that obtaining under the conditions treated previously.

G. The price structure, decentralized processing, special quality requirements for fluid milk - variations in production.

The seasonal variation in prices to producers would be even more marked than under the conditions treated previously if there were higher quality requirements for milk produced for use as fluid milk than for milk produced for use in other products.

This can be demonstrated quite readily by reference to the following example wherein it is assumed that (1) distributors bring to the market only that milk needed to meet their fluid requirements, which are assumed to be constant; (2) the area from which the fluid milk is drawn is contracted and expanded inversely to the seasonal variation in production; (3) distributors contract with producers to take their milk only for the periods wherein it is needed (obviously, under this sort of an arrangement the milk of some producers would be used as fluid milk all of the time while that of others would be so used at only certain specified seasons in the year); (4) the cost

of meeting sanitation requirements; if all milk were sold as fluid milk during the year, would be 20 cents per hundredweight per producer; (5) the alternative farm value of milk sold for any other purpose is \$1.00 per hundredweight; (6) transportation costs vary uniformly with distance, at one cent per hundredweight per mile; (7) during the season when the milk of producers in outlying areas is not needed for fluid milk uses, there are plants available for manufacturing it into other dairy products.

Under these circumstances the total yearly cost of meeting fluid milk requirements for outlying producers, or, rather, for those producers who sell their milk as fluid milk for a short period during the year, would have to be covered in a much higher farm price¹⁰ for the months during which they sell their milk as fluid milk.¹⁰ Under these assumptions, a producer selling his milk as fluid milk during the entire year would incur only 20 cents per hundredweight additional expense for meeting sanitation regulations. On the other hand, the producers who sold milk as fluid milk one month of the year would incur equal expenses over the entire year, or approximately twelve times as great per unit for the month during which such milk is sold as fluid milk. Thus, during the season of low production the farm price must be sufficient to cover, during one month, the entire cost of meeting sanitation regulations for the entire year, which, in the assumed case, would amount to approximately \$2.40 per hundredweight above the alternative use value for milk at the farm. The operation of this factor is depicted graphically in Figure 8.

Under these assumptions the f.o.b. city price (farm price plus transportation costs) ranges from \$2.20 per hundredweight during the month of high production to \$4.95 per hundredweight during the month of low production. If, as assumed, distributors purchase a uniform quantity of milk per month, the weighted average price would be approximately \$2.90 per hundredweight. If, however, production within the area within 100 miles of the market (see Figure 8) were uniform from month to month at a level equal to production during the month of high production obtaining in the example set forth above, the f.o.b. market price throughout the year would be \$2.20 per hundredweight as compared to the weighted average price of \$2.90 per hundredweight prevailing under the conditions as set forth in the previous example. If, therefore, the distributor

10/ Of course, part of the expenses of producing milk in conformance with the sanitation regulations is fixed, and part of them is variable. This introduces an additional complexity, and probably operates to change the seasonal price curve from that set forth in this analysis. However, it does not appear necessary to develop this point further for the purposes of this paper.

Farm Price Structure - Special Sanitation Requirements for Fluid Milk - Fluid Milk Area Varied Inversely to the Seasonal Variation in Production

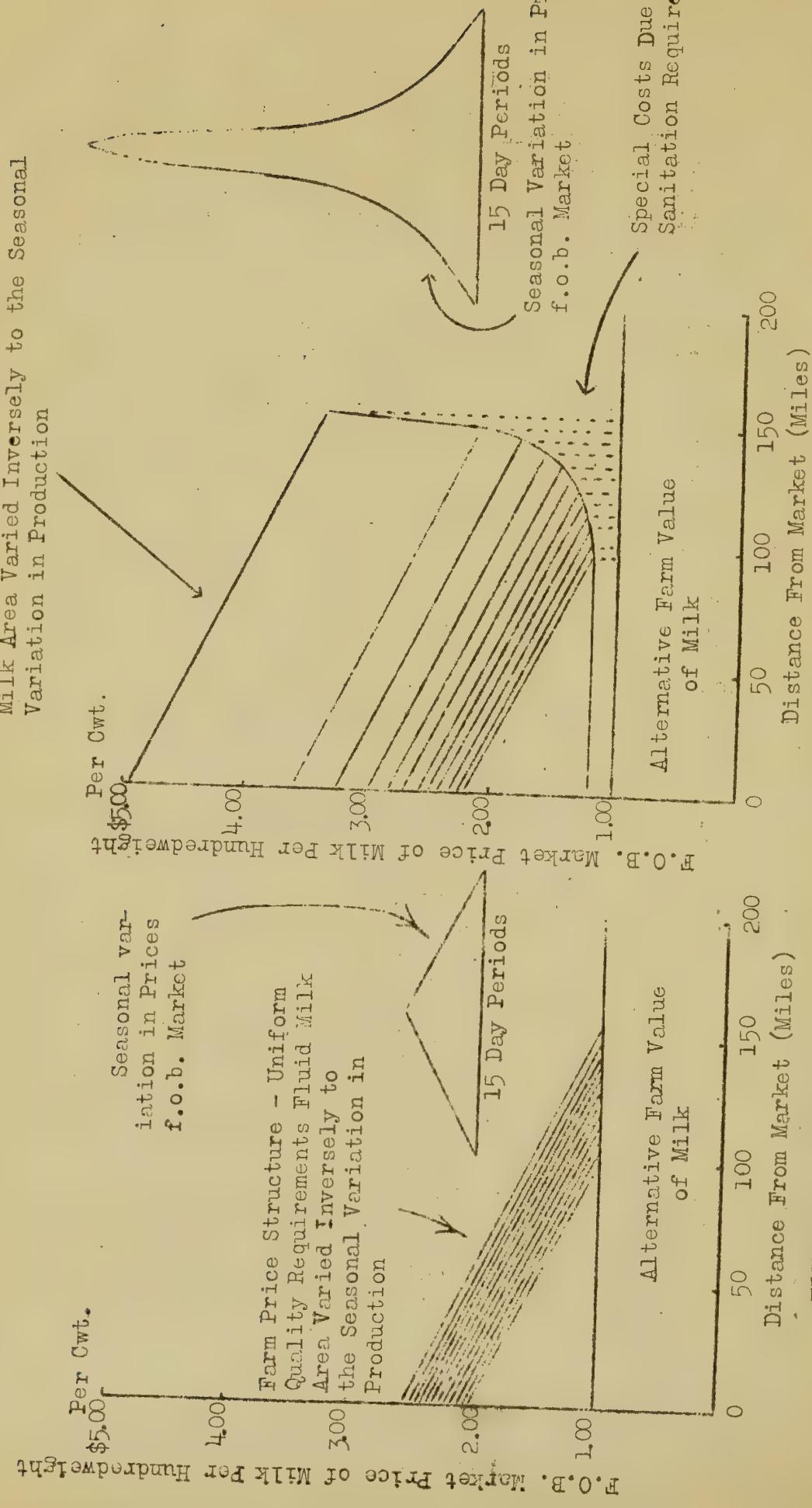


FIGURE 8. - THE PRICE STRUCTURE FOR FLUID MILK WITH DECENTRALIZED PROCESSING, SPECIAL QUALITY REQUIREMENTS FOR FLUID MILK ASSUMED.

could procure his milk supply from producers who produce a constant volume of milk throughout the year, it is to his best interest to do so, since he could secure his milk supply for less total cost than would be the case otherwise. 11/

It should be noted that the marked seasonal variation in prices, which in any particular market would be different from that set forth above, depending upon the degree to which conditions in the market and the supply area vary from those assumed in the example, would in time be partially corrected by producers within the area changing their seasonal output curves in order to sell a larger volume of milk during the period when prices are seasonally high. However, it would be greatly to the advantage of some producers to shift their seasonal output curves, and little if any to others, depending upon the type of farm organization and operation followed by each.

It has already been indicated that distributors can afford to pay producers in such a manner that evenness in production is encouraged, due to the economies in procurement costs in securing milk from an area that is rather constant geographically and in number of individual sources of supply rather than an area that varies markedly in geographical extent and in the number of individual sources of supply. Also, it has been indicated that the economies involved in handling a minimum and rather constant volume of excess milk furnish an incentive for distributors to pay producers in such a manner that evenness in production is encouraged, in addition to the incentive noted above.

Heretofore it has been assumed, for purposes of analysis, that there is no difference between the seasonal production curves of individual producers. This assumption is now discarded and the analysis focused upon conditions more nearly in accordance with those that prevail in actual markets. It is well recognized that there are marked differences between the seasonal production curves of different groups of producers as well as individual producers. 12/ Thus, in any particular milk market there are many producers who produce milk practically in accordance with fluid milk needs, while others do not.

11/ For purposes of presentation and emphasis, this example has been exaggerated.

12/ Lininger, F. F., Pennsylvania State College, Agricultural Experiment Station Bulletin No. 231, also based on unpublished data in the files of the Dairy Section.

A brief consideration of the types of distributors and processors operating within any particular milk shed will now be given in order to bring into the analysis the conditions which, taken in conjunction with those set forth in the two preceding paragraphs and in Part III of this paper, suffice to explain why milk suitable for consumption as fluid milk is brought to market, one part of which sells for one price, another part for another, etc., in short, the development of a system of class prices.

In almost any milk market (except as is the case in those small villages and towns where practically all of the milk is distributed by producers) where the economy of the market has developed to the point that distributors have become specialized, different degrees of specialization obtain between distributors. Some distributors sell only fluid milk and/or cream, others sell only fluid milk and/or cream and a relatively small volume of manufactured by-products (butter, cheese, ice cream, etc.) and still others sell some fluid milk and cream and sell a relatively large volume of manufactured dairy products. Within the same area, other processors produce and sell manufactured dairy products entirely. In other words, all degrees of enterprise combinations are to be found, ranging from the highly specialized fluid milk distributor to the relatively as highly specialized manufacturer of manufactured dairy products. The reason for such specialization is, obviously, that the economies in organization and operation gained through specialization are quite marked. This point needs no further proof than that evident to anyone who observes the present organization and operation of industry, both agricultural and non-agricultural.

Under the above conditions, it may appear that it is to the interest of all fluid milk distributors and all processors of manufactured dairy products within a particular area to pay producers in such a manner that evenness in production is encouraged rather than for specialized fluid milk distributors to do this alone. This is true to a certain extent. However, milk is bulky and perishable and the storage of milk is not economically feasible. On the other hand, manufactured dairy products can be and are stored for relatively long intervals. Thus, manufactured dairy products are produced in largest volume during the spring and summer months and are stored until they are moved into consumption. This tends to even out the seasonal variation in the prices of manufactured dairy products. Under these conditions the premium that could be paid producers of milk for use in manufactured dairy products to encourage evenness in supply would be equal to the cost of storage from the flush production period until the product moves into consumption and the savings realized in manufacturing costs when the volume of product

produced throughout the year is constant rather than varying. In addition, the supply areas of individual manufacturing plants are, in most cases, much smaller than the supply areas of individual fluid milk plants so that transportation costs do not affect farm prices seasonally to as great an extent as is the case with fluid milk. Also, there are, in many cases, few sanitation requirements with respect to the production, care and handling of milk produced for use in the production of manufactured dairy products; and, in those cases where there are sanitation requirements with respect to such milk, they are rarely, if ever, of such nature that farm production costs are increased markedly. Thus, sanitation requirements for milk produced for use in the production of manufactured products do not operate to increase the seasonal variation in the price of such milk to any appreciable degree, certainly, in any case, to a much lesser extent than in the case of milk produced for use as fluid milk. These considerations suffice to explain in a large measure why pricing systems pointed to encouraging evenness in production have not developed with respect to milk produced for use in the production of manufactured dairy products.

In view of the foregoing, it appears that there is a wide range in the incentive of different types of distributors to pay producers in a manner that encourages evenness in production. For specialized fluid milk distributors this incentive is quite strong and diminishes in strength in relation to the diminution in the degree of specialization of distributors until, in the case of manufacturers of manufactured dairy products, there is little incentive to purchase milk from producers for evenness so that evenness in production is encouraged. Under these conditions fluid milk distributors will compete with each other to secure the patronage of those producers who produce a rather constant volume of milk throughout the year so that these producers become associated with specialized fluid milk distributors. Further, producers who produce a more variable volume of milk will become associated with less specialized distributors. Stated in other terms, when producers are classified on the basis of their relative seasonality of production, they will tend to become directly associated with distributors in accordance with the relation between the relative constancy of production of different classes of producers and the relative strength of the incentive of different classes of distributors to secure an even volume of supply of the raw material. Thus, within a milk shed different producers will receive different prices for milk, such differences, after adjustments for location differences, being due to relative differences in the seasonal variation of production of different producers. Under these circumstances and providing economic forces have time to work out their full effects, producers who produce a relatively constant volume of milk throughout the year will receive

higher prices than those producers who produce a relatively more variable volume of milk throughout the year. Furthermore, the producers who produce a relatively constant volume of milk throughout the year will tend to be associated with highly specialized fluid milk distributors (highly specialized in the sense that the operating unit is engaged almost entirely in the distribution of fluid milk), while those who produce a relatively more variable quantity will be associated with distributors who are less highly specialized (in the sense noted above).

Heretofore, no seasonal variation in consumption of fluid milk has been assumed. The next step in the analysis is to examine how (1) various factors operate to establish retail prices for fluid milk at a practically uniform level throughout the year and, with small seasonal variation in demand, lead to the development of the seasonal excess, and (2) the manner in which the bargaining arrangements between producers and distributors affect the price structure for milk within a milk shed.

PART III

The Utilization of Milk in a Market as Influenced by the Nature of the Demand for Milk.

Heretofore the analysis has been developed on the assumption that there were no variations in the amount of milk sold as fluid milk in the market from day to day and season to season, hence, granting seasonal variation in production, it followed that, during the period of the year when production exceeded consumption, a portion of the milk produced for use as fluid milk in a particular area had to be diverted to uses other than fluid milk. This assumption is now dropped, and the analysis is focussed upon the determination of (1) whether there are variations in the volume of milk sold in the market from day to day and season to season, (2) the factors that account for such variations, if any, and (3) whether such variations are or normally may be expected to be of sufficient amplitude to keep the total volume of milk sold as fluid milk in the market equal to the volume of milk produced for use as fluid milk in the area supplying the market. A solution of the problems noted above is to be found largely in a consideration of the nature of the demand for fluid milk and the manner in which milk is distributed to consumers.

When considered in light of the usual supply and demand analysis of the factors affecting the price of any particular commodity, it might be expected that retail milk prices to consumers would be adjusted or changed from day to day and week to week as changes took place in the supply and demand situation. Stated differently, if, on a particular day of the week or during any particular week, milk supplies increased or decreased, it might be expected that retail milk prices (assuming no change in demand) would vary inversely to the changes in supplies, especially in view of the fact that milk is a highly perishable product and cannot be stored advantageously.

As far as actual supply and demand conditions are concerned, there are relatively large day to day variations in demand ^{13/} and relatively small day to day variations in supply. Under these circumstances, it might appear that there would be marked variation in the retail price of milk from day to day. However, it is probable that this pricing procedure would necessitate a type of market organization or mechanism whereby buyers and sellers would meet, or through which buyers' day to day demand schedules and sellers' day to day schedules of reservation prices would

^{13/} This point is developed in more detail later.

be made known and would operate to adjust prices in accordance with the day to day supply and demand situation. This type of market organization or mechanism would be somewhat analogous to the present produce exchanges. However, such procedure would be markedly different from the present procedure through which day to day retail prices not only of milk but of many other products are established.

Milk is generally distributed to consumers early in the morning, and numerous milk routes are necessary in order that customers be reached. A driver on a milk wagon cannot ascertain what the demand for milk will be on his route until he has completed deliveries. Thus, as a practical matter, it is impossible for him to adjust his prices in accordance with the demand situation as he finds it. The same considerations apply to the distributive enterprise as a whole. If the demand schedules of consumers on each milk route, and the aggregate demand schedules of consumers purchasing from each distributor and for the market as a whole, were known and accurately predictable from day to day, then the dealer could (in theory) quote prices each day on the basis of day to day changes in the day to day supply and demand situation. As a practical matter this procedure would be extremely unworkable. The highly technical nature of the analysis that would be necessary if such procedure were to be followed, the cost of such precise analysis (which would probably have to be detailed enough to allow the determination and forecasting of the demand schedules on many, if not all, milk routes), and the partially indeterminate nature of the results secured would preclude following the procedure outlined. The only practical procedure is for the distributor to quote prices for a longer period of time, rather than to quote prices daily. This is the procedure distributors actually follow and, under these circumstances, day to day variations in the demand for fluid milk (day to day variation in supplies ¹⁴ are negligible) are manifest in variations in day to day purchases by consumers at a constant price, rather than being manifest in day to day variations in price.

It may appear, when weekly and monthly periods are considered, that retail prices would change in response to weekly and monthly changes in the supply and demand situation. However, retail prices remain constant for relatively long periods. (See Table 1.) The reasons for retail prices remaining constant for relatively long periods of time, rather than being reduced so that the seasonal increase in the volume of milk produced for use as fluid milk which takes place during the summer months in most milk market supply areas is moved into consumption as fluid milk, will now be examined. The explanation of practically constant retail prices of fluid milk is to be found mainly in the nature of consumer's response to changes in prices and, arising mainly therefrom, the sales and price policy followed by distributors.

¹⁴/ This is not to say that supplies do not change from day to day, since there is a trend in daily supplies that is seasonal in character. However, this trend is small when considered on a

Table 2. Number of periods during which retail price of milk remained unchanged for a year or more in principal milk markets.

Market	Period during which price remained unchanged				Period covered	the period during which price remained constant for a year or more is of total months in entire period	Percentage which
	13-24 months	25-36 months	37-48 months	Over 48 months			
New York	1	2	:	:	1	1909-31	46.4
Boston	:	1	:	:	1907-31	11.3	:
Philadelphia	1	2	:	:	1907-31	67.7	:
Chicago	1	:	1	2	1907-31	71.7	:
Baltimore	5	1	:	1	1909-33	61.3	:
Washington	4	1	:	:	1909-31	51.2	:
Minneapolis	4	1	:	:	1909-30	35.2	:
St. Paul	2	1	:	:	1914-31	28.2	:
St. Louis	1	1	:	1	1909-31	52.2	:
Atlanta	5	:	1	:	1907-31	40.3	:
Omaha	3	:	:	:	1909-31	22.1	:
Denver	2	1	:	1	1909-31	41.7	:
Los Angeles	5	:	1	1	1909-31	64.9	:

Based on data secured from reports of the Bureau of Labor Statistics, United States Department of Labor.

Statistical investigations have in general indicated that the demand for fluid milk by consumers is very inelastic; that is, that the change in the quantities of milk taken, following increases or decreases in price, is relatively very small. Two published studies ^{15/} for the Chicago and New York markets indicate that, during the period covered by the studies, when consumers recognized the necessity for changes in the retail price of milk, a one cent change in the retail price of milk per quart had a very slight immediate effect on sales and this effect was considerably diminished after five or six weeks.

Evidence relative to the influence of price changes upon milk sales has been obtained from an examination of the milk sales by distributors purchasing from cooperative associations in Baltimore, Maryland, Boston, Massachusetts, and the Twin Cities, Minnesota. In these cities the cooperative associations have a considerable share of the business of the market and changes in their sales are no doubt representative of the market as a whole. These data were analyzed by comparing the sales in the calendar month preceding the price change with the sales in the calendar month following the price change, ^{16/} after adjusting for the influence of the average seasonal variation in sales. Indexes of seasonal variation were calculated by the median-link-relative method, omitting the months in which price changes occurred. The compared months have been adjusted by dividing each by its corresponding seasonal index. The results of the analysis are given in Tables 2 to 4.

Examination of the data shows that usually a change in price results in an opposite but much smaller change in sales. In Boston, there were fifteen price changes (eight decreases and seven increases) during the period March 1922 to September 1931; in Baltimore there were only two changes, one decrease and one increase; and in the Twin Cities market there were seven decreases and three increases. Changes in sales in Boston were directly associated with changes in prices in four cases instead of being inversely associated as would be the case if other conditions remained the same. These four exceptions followed price changes occurring in July 1927, April 1928, July 1929 and August 1931; and there were four exceptions in the Twin Cities market in March 1926, November 1927, January 1931 and March 1932.

^{15/} Ross, H. A. The Marketing of Milk in the Chicago Dairy District. Ill. Agr. Exp. Sta. Bull. 269, pp. 503-510, 1925.
Ross, H. A. Some Factors Affecting the Demand for Milk and Cream in the Metropolitan Area of New York. U. S. Dept. of Agr. Tech. Bull. 73, pp. 44-47, 1922.

^{16/} In some cases prices changed each month for two or more consecutive months. In these cases, the sales in the calendar month preceding the price change were compared to the calendar month following the last month in the series of consecutive monthly price changes.

Table 3. Changes in sales of fluid milk
following changes in retail prices,
Baltimore, Maryland, September 1926
to May 1931, inclusive.

Month	Sales	Index of	Seasonally	Retail
	(30-day monthly basis) <u>1/</u>	seasonal variation <u>2/</u>	adjusted sales <u>3/</u>	prices per quart <u>4/</u>
	<u>1,000 gallons</u>	<u>Percent</u>	<u>:1,000 gals</u>	<u>Cents</u>
September 1926	1,544	100.5	1,536	13
November 1926	1,510	101.0	1,495	14
Percent change			-2.7	+7.7
March 1931	1,431	100.2	1,428	14
May 1931	1,462	101.4	1,442	12
Percent change			+1.0	-14.3
Absolute average percent change <u>5/</u>			1.8	11.6

1/ Table 18 Appendix.

2/ Table 17 Appendix.

3/ Computed from Columns 1 and 2.

4/ Table 19 Appendix.

5/ Represents average of percentage changes without regard to signs.

Table 4. Changes in sales of fluid milk following changes in retail prices, Boston, Massachusetts, March 1922 to September 1931.

Month	Sales		Seasonally adjusted sales <u>3</u>	Retail prices, per quart <u>4</u>
	(30-day month basis) <u>1</u> /	Index of seasonal variation <u>2</u> /		
	Mill. lbs.	Percent	Mill. lbs.	Cents
March 1922	22.0	98.6	22.3	13.5
May 1922	22.8	99.5	22.9	12.5
Percent change			+2.7	-7.4
June 1922	23.9	102.8	23.2	12.5
August 1922	22.9	103.1	22.2	13.5
Percent change			-4.3	+8.0
March 1923	23.0	98.6	23.3	14.5
May 1923	23.6	99.5	23.7	13.5
Percent change			+1.7	-6.9
June 1923	25.6	102.8	24.9	13.5
September 1923	23.2	100.5	23.1	14.5
Percent change			-7.2	+7.4
October 1923	23.6	100.4	23.5	14.5
May 1924	25.2	99.5	25.3	12
Percent change			+7.7	-17.2
June 1924	26.2	102.8	25.5	12
October 1924	24.1	100.4	24.0	14.5
Percent change			-5.9	+20.8
February 1925	24.6	97.6	25.2	14.5
April 1925	25.2	97.2	25.9	13.5
Percent change			+2.8	-6.9
April 1925	25.8	97.2	25.9	13.5
June 1925	28.0	102.8	27.2	13
Percent change			+5.0	-3.7
June 1925	28.0	102.8	27.2	13
September 1925	25.7	100.5	25.6	14.5
Percent change			-5.9	+11.5

Table 4. (Continued)

Month	Sales	Index of seasonal variation	Seasonally adjusted sales	Retail prices, per quart
	Mill. lbs.	Percent	Mill. lbs.	Cents
October 1926	28.4	100.4	28.3	14.5
February 1927	27.8	97.6	28.5	14
Percent change			+0.7	- 3.4
June 1927	29.0	102.8	28.2	14
March 1928	29.5	98.6	29.9	15.5
Percent change			+6.0	+10.7
March 1928	29.5	98.6	29.9	15.5
May 1928	29.5	99.5	29.6	14.5
Percent change			-1.0	- 6.5
June 1928	29.9	102.8	29.1	14.5
September 1928	29.4	100.5	29.3	15.5
Percent change			+0.7	+ 6.9
November 1930	29.1	100.7	28.9	15.5
March 1931	30.2	98.6	30.6	12.5
Percent change			+5.9	-19.4
July 1931	31.6	106.8	29.6	12.5
September 1931	30.1	100.5	30.0	13.5
Percent change			+1.3	+ 8.0
Average percent- age change ^{5/}			-5.8	+11.9
Average percent- age change ^{6/}			+3.8	- 9.3
Absolute average percentage change ^{7/}			4.5	10.2

^{1/} Table 20 Appendix.

^{2/} Table 17 Appendix.

^{3/} Computed from ^{1/} and ^{2/}.

^{4/} Table 21 Appendix.

^{5/} Represents average of percentage increases in price that were associated with percentage decreases in sales.

^{6/} Represents average of percentage decreases in price that were associated with percentage increases in sales.

^{7/} Represents average of percentage changes in price or in sales, without regard to signs, that were associated with opposite changes in sales or in price.

Table 5. Changes in sales of fluid milk following changes in retail prices, Twin Cities, Minnesota, March 1924 to August 1932.

Month and year	Sales 30-day-month basis 1/	Index of seasonal variation 2/	Seasonally adjusted sales 3/	Retail prices per quart 4/
	: Thousand pounds:	Percent	: Thousand pounds:	Cents
March, 1924	11,279	101.4	11,123	11.5
May, 1924	11,720	99.5	11,779	10
Percent change			+ 5.9	- 13.0
July, 1924	11,871	98.0	12,113	10
September, 1924	11,788	100.1	11,776	11
Percent change			- 2.8	+ 10.0
August, 1925	12,570	99.1	12,684	11
October, 1925	12,492	102.5	12,187	12
Percent change			- 3.9	+ 9.1
December, 1925	11,861	98.0	12,103	12
March, 1926	12,246	101.4	12,077	11
Percent change			- 0.2	- 8.3
August, 1927	12,111	99.1	12,221	11
November, 1927	12,608	101.7	12,397	12
Percent change			+ 1.4	+ 9.1
December, 1929	12,980	98.0	13,245	12
February, 1930	13,571	101.0	13,437	11
Percent change			+ 1.4	- 8.3
October, 1930	13,543	102.5	13,213	11
January, 1931	12,961	98.8	13,118	10
Percent change			- 0.7	- 9.1
November, 1931	12,724	101.7	12,511	10
January, 1932	12,203	98.8	12,351	9.5
Percent change			- 1.3	- 5.0
January, 1932	12,203	98.8	12,351	9.5
March, 1932	12,543	101.4	12,361	8.5
Percent change			+ 0.1	- 10.5
June, 1932	12,534	98.1	12,777	8.5
August, 1932	12,717	99.1	12,832	8
Percent change			+ 0.4	- 6.3
Average percentage: change 5/			- 3.5	+ 9.6
Average percentage: change 6/			+ 2.0	- 9.5
Absolute average percentage change 7/			2.4	9.5

1/ Table 22, Appendix.

2/ Table 17, Appendix.

3/ Computed from columns 1 and 2.

4/ Table 23, Appendix.

5/ Represents average of percentage increases in price that were associated with percentage decreases in sales.

These unusual cases occur in periods when business conditions were changing rapidly and appear to be adequately explained by changes in these conditions.

Data contained in the reports of the Market Administrators for the various markets operating under Federal licenses also provide some indication of the consumer response to price changes in these markets. Only those markets where Class I milk was defined as whole milk, sold or distributed for consumption as whole milk, and where the size of the sales area has remained constant are considered. These data have been received for such a short period that it was impossible to compute a satisfactory index of seasonal variation and adjust sales for seasonal variation, except where other sales data from the same market were available for earlier periods.

The results of this latter study must be interpreted with some caution since there are other factors than price which influence sales. Sudden changes in temperature influence the volume of milk sold. There is a seasonal variation in total fluid sales, which is in part influenced by the vacation movement, and this in turn is affected by the prosperity of the community. Moreover, in a period of several months in recent years business conditions and consumer incomes have changed materially. These considerations limit somewhat the significance of the results of the study. It is important to note, however, that the results supplement the results obtained in the other studies, showing that changes in price are associated with changes in fluid milk sales, and that the changes in prices are relatively much greater than the changes in sales. The data are shown in Table 5 and indicate that an average change of 3.4 percent in sales is associated with an average opposite change of 12.3 percent in price.

It appears from the foregoing that the demand for milk is highly inelastic, especially when retail price changes are relatively small. When price changes are relatively large, it is probable that the change in consumption may be somewhat greater than when the changes in the retail price are relatively small, although the change in sales is probably less than directly proportional to the change in price, although the data that are available relative to this point are inconclusive.¹⁷ Stated differently, while the demand for milk is less inelastic when large, rather than small, price changes are considered, the coefficient of elasticity of demand still appears to be considerably less than unity.

¹⁷/ See also Ross, H. A., Some Factors Affecting the Demand for Milk and Cream in the Metropolitan Area of New York, Technical Bulletin No. 73, U. S. Department of Agriculture.

Table 6. Summary of changes in sales and in prices
in specified cities.

Sales area and period	: Estimated average daily Class I sales	: Retail delivery price, per quart
	: Pounds	: Cents
Boston:		
April 1934 to September 1934	: 1,618,000	: 11
October 1934 to February 1935	: 1,592,000	: 12
Percentage change	: - 1.6	: + 9.1
March 1935 and April 1935	: 1,576,000	: 13
Percentage change	: - 1.0	: + 8.3
Detroit:		
April 1934 to June 1934	: 1,221,000 1/	: 10
July 1934 to February 1935	: 1,167,000 1/	: 11
Percentage change	: - 4.4	: +10.0
March 1935	: 1,153,000 1/	: 12
Percentage change	: - 1.2	: + 9.1
Evansville:		
May 1934 to September 1934	: 43,764	: 9
October 1934 to March 1935	: 41,635	: 9.5
Percentage change	: - 4.9	: + 5.6
Grand Rapids:		
August 1934 and September 1934	: 127,123	: 9
October 1934 to March 1935	: 127,208	: 10
Percentage change	: 0.0	: +11.1
Kalamazoo:		
July 1934 to November 1934	: 36,733	: 10
December 1934 to February 1935	: 40,720	: 8
Percentage change	: +10.9	: -20.0
March 1935	: 39,397	: 10
Percentage change	: - 3.2	: +25.0
Absolute average percentage change 2/	: 5.4	: 12.3

Tables 24 to 28, inclusive, Appendix.

1/ Adjusted for seasonal variation.

2/ Represents average of percentage changes without regard to signs.

On the basis of the foregoing, it appears that it would require a very marked decrease in price in order that any appreciable seasonal increase in the volume of milk produced for use as fluid milk be moved into consumption as fluid milk in the market as a whole. It is rather generally recognized that changes in the prices received by producers that are associated with changes in retail prices are relatively greater than the changes in retail prices. This is due to the fact that some of the more important elements in the gross margin between the price received by producers and the price at which the milk is sold at retail (transportation costs, country station charges and the like) do not change with changes in volume; in other words, they are fixed charges per unit. This being the case, the seasonal variation in prices received by producers would be relatively greater than the seasonal variation in retail prices, which, as was pointed out before, would have to be quite marked in order that any appreciable seasonal increase in the production of milk produced for use as fluid milk within the supply area be consumed as fluid milk. Over a period of time, the market seasonal variation in prices received by producers would tend to be reduced, since producers would change the seasonality of their production in order to sell a larger volume of milk at the time of year when prices were seasonally high, and would reduce their sales during the period when prices were seasonally low. However, it would be greatly to the advantage of some producers to change the seasonality of their production and little, if any, to others, depending upon the type of farm organization and operation followed by each. Thus, given time for economic forces to work out their full effects, the seasonal variation in supplies and prices received by producers, and consequently the seasonal variation in retail prices, would be much less marked than would appear to be the case at first.

The second limitation to lowering prices on the basis of the seasonal increase in the volume of milk produced for use as fluid milk by any dealer is that, in order to hold the new customers later when supplies in the market are short, dealers would have to develop new sources of supply during the short season in order to have sufficient milk to meet the requirements of their larger business. These new sources involve an expense in development (see Part II, Section G) and may also have an equal or greater seasonal variation in production the following year. The alternative is to raise prices when supplies are short and thereby reduce the customer's takings or to fail to serve the added customer. Either of these latter procedures is sure to lead to dissatisfaction.

The foregoing facts and considerations suffice to explain in large part why retail prices of fluid milk tend to remain practically constant on a seasonal basis. Thus, instead of retail prices showing marked seasonal variation of such magnitude that the seasonal changes in volume of milk produced for use as fluid milk be moved into consumption as fluid milk, retail prices remain practically constant seasonally and seasonal changes in demand are reflected in greater or less takings of fluid milk, as the case may be, at the ruling level of prices. Such seasonal variations in demand are generally quite small, and are much less than the seasonal variation in the volume of milk produced for use as fluid milk that obtains in most milk market supply areas. (See Table 17, Appendix.) ^{18/} Thus, unless the volume of milk produced for use as fluid milk is equal to fluid milk requirements on a seasonal basis, the seasonal increase in the volume of milk produced for use as fluid milk is diverted to uses other than fluid milk. Stated differently, the seasonal increase in the volume of milk produced for use as fluid milk becomes a seasonal excess over fluid milk requirements. In the next part of the analysis of the price structure for milk within a milk shed, an explanation of the development of class prices, or the classified price plan of payment for milk by distributors, will be set forth.

^{18/} See also Ross, H. A., The Marketing of Milk in the Chicago Dairy District, Ill. Agr. Exp. Sta. Bull. No. 269, and Ross, H. A., Some Factors Affecting the Demand for Milk and Cream in the Metropolitan Area of New York, U. S. Dept. of Agr. Tech. Bull. No. 73.

Part IV

The Price Structure for Milk within a Milk Shed - The Development of Class Prices.

The analysis of the price structure for milk within a milk shed will now be focussed upon the manner in which class prices or, stated more precisely, the classified price plan of selling milk to distributors, develops in a milk market. At this point it is important to set forth as clearly as is possible in a short paper the difference between the classified price plan and the rating plan.^{19/} The classified price plan is a method of selling milk to distributors, while the rating plan is a method of prorating to producers the proceeds of sales to distributors. The classified price plan does not necessarily need to be complemented by the operation of a rating plan, and classified price plans are often used where no rating plan is in operation. On the other hand, the rating plan under certain forms of administration becomes in effect a classified price plan and a plan for prorating to producers the proceeds of sales to distributors. For example, in some markets, producers associations bargain for "base" and "surplus" prices; "bases" are established for individual producers for which "base" milk producers receive "basic" prices. Producers are shifted among distributors in such fashion that the total bases of producers delivering milk to any particular distributor are approximately equal to such distributor's sales of fluid milk. However, pricing milk to distributors in accordance with a classified price plan is usually more precise than that just noted, with a more strict accounting and pricing of milk according to use, and is not necessarily operated in conjunction with a base-rating plan.

For the purposes of this paper, the classified price plan is defined as a method of selling and pricing milk to distributors in accordance with the use made thereof, while the base-rating plan is defined as a method of prorating to producers the proceeds of sales to distributors.

It has already been demonstrated (see Part II) that, assuming little seasonal variation in the demand for milk, certain supply characteristics operate so that, given differences in individual producers' seasonal output curves, and providing that economic forces have time to work out their full effects, producers who produce a relatively constant volume of milk throughout the year will receive higher prices, other factors accounted for, than producers who produce a relatively more variable volume of milk throughout the year. Furthermore, the producers who produce a relatively constant volume of milk throughout the year will tend to become associated with highly specialized fluid milk distributors (highly specialized in the sense that the operating unit is engaged almost entirely in the distribution of fluid milk, while those who produce a relatively more variable quantity throughout the year will tend to

^{19/} Often called base-surplus, base-rating, and the like.

become associated with distributors who are less highly specialized (in the sense noted above). The assumption that there is little seasonal variation in the demand for milk was then examined, (Part III) and it was found that certain factors operate so that there is marked seasonal uniformity in retail fluid milk prices, and seasonal changes in demand, which are very small in most cases, are reflected in slight seasonal changes in the quantities of fluid milk consumed at practically constant prices, rather than seasonal changes in the quantities of milk consumed that are associated with seasonal changes in retail fluid milk prices. It is in the analysis of the seasonal behavior of retail fluid milk prices, and the effects such behavior would tend to have upon the prices received by producers, that the reasons for the development of the seasonal excess were ascertained.

Once the development of the seasonal excess has been demonstrated, the basis for the effort on the part of specialized fluid milk distributors to secure a uniform volume of milk throughout the year becomes apparent. Under these circumstances, the argument that specialized fluid milk distributors tend to secure milk to meet the needs of their fluid milk trade, which are practically constant seasonally, from producers who produce a relatively uniform volume of milk throughout the year, such producers receiving higher prices, other factors accounted for, than producers who produce a relatively more variable volume of milk throughout the year and, consequently, tend to become associated with less highly specialized distributors, applies with especial force.

It should be noted that it is not contended that distributors select producers who produce a relatively uniform volume of milk throughout the year at random throughout the milk shed. It is rather well recognized that, generally speaking, producers within a particular type of farming area have markedly similar seasonal output curves. Thus, a distributor who wishes to secure a uniform supply of milk throughout the year can usually operate in an area or areas where a fairly large supply of such milk is available.

The situation treated above with respect to the procurement of milk by distributors is strikingly similar to the situation that obtains when distributors purchase their milk in accordance with the provisions of a formal classified price plan. In the former situation, there is a close approximation to the purchase of milk on a classified price basis, considering the market as a whole, due to the fact that those distribution units which are highly specialized, i.e., which distribute by far the larger portion of the milk they secure as fluid milk, tend to pay higher prices for milk than distribution units which are less highly specialized, i.e., which utilize relatively more of the milk they secure as manufacturing milk. The difference between this method of purchasing milk and a formal classified price method of purchasing is merely one of the degree and precision with which milk is classified in accordance with the use made thereof.

Producers' cooperative associations have recognized the principles noted above in bargaining with distributors and have developed the system of formal class prices whereby milk is priced by cooperatives to distributors in accordance with the form in which milk is sold by distributors. Thus, a formal system of class prices, intended to secure the same result, is substituted for the rather informal system of class prices discussed above. The distributor with the larger use of milk in fluid sales pays a higher average price than the one with a considerable utilization in manufactured products. The system of formal class prices has the advantage for the producers' cooperative association of simplifying the bargaining arrangements, since it automatically establishes the basis of payment for the different dealers once the general terms for the market are determined. Without class prices, individual bargains would be necessary with each dealer in order to insure producers the full value of their particular milk, and the association would be exposed to the criticism of over- or under-pricing the milk of particular producers and over- or undercharging particular distributors. Class prices dispose of this necessity for individual bargains and result in payments corresponding to the prices which would have been arrived at under proper individual bargaining.

In addition to the seasonal factors treated above which lead to the development of a classified price plan of selling milk to distributors, there are certain types of organization of supply that would lead to the development of a formal class price system, even though the volume of milk produced throughout the year and the volume of milk consumed in the market throughout the year were precisely correlated, except for daily variations in demand and supply. In such cases, the reason for the development of a classified price plan is to be found in the fact that there must be brought to market a volume of milk in excess of daily average sales, such excess volume being needed to meet daily variations in sales.

It is rather well recognized that there are significant variations in the amount of milk sold from day to day in a fluid milk market, such variations being attributable to such factors as (1) consumption and working habits of the people which tend to show a regular day of the week variation, (2) holidays, and (3) changes in temperature.

Consumption and working habits of the people are such as to cause a rather regular day of the week variation in the sales of various products. Most business concerns, for example, do not operate on Sunday and many also close operations on Saturday afternoons. The Sunday dinner is frequently a heavier and more elaborate meal than that served on week days. These factors affect wholesale and retail sales of the various products differently. Wholesale sales of milk and cream are ordinarily low on Sunday, with sales to restaurants and cafeterias also low on Saturday. Sales of cream to stores are usually large on Saturday, Friday and Monday. Route sales of milk and cream are heavier on Sunday.

Examples of the variation in the average sales on various days of the week for several markets are given in tables 6 to 10, inclusive. In general, the greatest variation is found in cream sales, the range for the New York market for all cream being from 84.7 percent of the average daily sales for the week on Sunday to 127.9 percent on Saturday. For all milk in the same market the range was from 90.2 percent of the average daily sales for the week on Sunday to 102.8 percent on Friday. ^{20/} Examination of the tables indicates a greater variation in wholesale sales of fluid milk than of the retail sales, but in the case of cream the reverse may be the case. These variations differ in the various sections of a large city depending largely upon the economic status of the consumers and the number of persons who lunch away from home during the day. ^{21/} Since dealers have varying proportions of retail and wholesale business and serve different sections of the population, they are unlikely to have variations in sales corresponding to those in the market as a whole. Some dealers will have larger variations in sales and others smaller variations. The difference in the character of the business of dealers and the consequent differences of sales by day of the week, even for the same type of products, are shown in tables 11 to 14, inclusive. These tables show the variation in the sales of Milwaukee, Wisconsin, dealers during the week of April 22 to 28, 1934. The daily sales of each dealer have been shown as a percentage of his own average daily sales for the week. This variation in sales among dealers means that the excess milk above the average daily sales of the market is higher than would be the case if dealers had available some method of integrating their individual fluctuations in sales with other dealers having different fluctuations, through a shifting of milk between them.

^{20/} Ross, H. A., Some Factors Affecting the Demand for Milk and Cream in the Metropolitan Area of New York, United States Department of Agriculture - Technical Bulletin 73, 1928.

^{21/} Ibid, p. 32.

Table 7. Daily fluctuation in sales of milk and cream
in the New York Metropolitan Area, 1924.

Type of sale	Percentage of average daily sales for the week					
	Sunday	Monday	Tuesday	Wednesday	Thursday	Saturday
	Percent	Percent	Percent	Percent	Percent	Percent
Retail sales of milk						
Qts., Grade B	103.7	99.5	99.6	99.8	99.2	98.9
Qts., Grade A	100.5	100.0	100.2	100.3	99.8	99.4
Qts., Certified	98.9	100.9	99.8	100.6	100.6	98.9
Qts., Buttermilk	76.4	106.9	106.5	106.3	102.9	94.5
Pts., Grade B	77.6	106.8	106.9	108.0	108.0	85.5
1/2 Pts., Condensed	106.0	96.9	99.0	105.8	93.8	103.8
Retail sales of cream						
1/2 Pts., Light	108.0	98.0	99.7	103.5	97.8	96.4
1/2 Pts., Extra Heavy	176.3	83.4	89.8	92.3	86.2	90.9
Wholesale sales of milk						
Qts., Grade B	92.8	99.4	100.8	99.6	100.8	102.2
Pts., Grade B	46.8	115.2	116.8	115.7	118.4	71.2
Bulk, Grade B	73.5	107.3	103.1	104.2	104.3	100.4
Condensed Milk	12.7	114.5	86.9	93.4	83.6	148.3
Buttermilk	34.4	126.5	106.0	109.2	114.4	115.0
Wholesale sales of cream						
Light	42.3	118.9	95.6	93.7	94.9	132.8
Extra Heavy	72.9	107.7	88.9	91.4	86.6	140.3

Compiled from "Some Factors Affecting the Demand for Milk and Cream in the Metropolitan Area of New York," by H. A. Ross, United States Department of Agriculture, Technical Bulletin No. 73, June 1928.

Table 8. Daily fluctuation in retail, wholesale and total sales of fluid milk and cream in Reading, Pennsylvania.

Type of sale	Percentage of average daily sales for the week						
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Milk:							
Retail	107.49	95.18	98.62	98.54	99.01	99.18	101.97
Wholesale	61.36	106.27	102.46	102.86	104.50	115.20	107.35
Total	91.90	98.93	99.92	100.00	100.86	104.60	103.79
Cream:							
Retail	136.07	87.18	99.62	96.63	87.51	85.99	107.01
Wholesale	77.21	102.33	96.32	111.62	105.01	95.83	111.67
Total	112.91	93.14	98.32	102.53	94.40	89.87	108.84

Compiled from "Distribution and Consumption of Milk in Reading, Pennsylvania," by T. K. Cowden, Pennsylvania Agricultural Experimental Station, Technical Bulletin 614, November 8, 1933.

Table 9. Daily fluctuation 1/ in sales of certain dairy products
in Chicago and suburbs.

Type of sale	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Milk, Quarts	104.7	97.2	99.9	99.3	100.4	100.4	100.0
Milk, Pints	64.3	100.8	104.2	104.9	104.4	105.2	81.3
22% Cream, 1/2 Pints	153.7	93.7	100.7	99.3	103.1	97.6	99.3
32% Cream, 1/2 Pints	311.9	76.4	88.1	96.3	107.3	93.0	115.3
	:	:	:	:	:	:	:
	:	:	:	:	:	:	:

Compiled from "The Marketing of Milk in the Chicago Dairy District," Illinois Agricultural Experiment Station Bulletin No. 269.

1/ Based on average retail sales to more than 200,000 families during the three-year period 1920-1922. Average sales for the five days Tuesday, Wednesday, Thursday, Friday and Saturday = 100 percent.

Table 10. Daily fluctuation in sales and receipts of milk and cream for the Pittsburgh market, during the last two weeks of July, 1933. ^{1/}

Type of sale	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Percent of average daily sales for the week
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Regular fluid milk	76.25	105.16	102.56	100.69	102.01	109.44	103.90	
Special fluid milk	95.09	97.74	103.66	97.06	105.17	96.31	104.96	
Fluid fluid milk	76.67	104.99	102.58	100.61	102.08	109.15	103.92	
Fluid Cream	92.36	92.41	100.60	93.22	105.57	99.82	116.02	
Dealer purchases of milk and cream	98.35	97.26	100.21	102.83	101.31	98.55	101.48	

Compiled from "The Distribution and Consumption of Milk in Allegheny County, Pennsylvania," by T. K. Cowden, and C. G. Gifford, Pennsylvania Agricultural Experiment Station Technical Paper 641, March 13, 1934.

^{1/} Based on reports received from 35 dealers handling 77 percent of the fluid milk sales in the market.

Table 11. Daily fluctuation in the sales of milk and cream in Williamsport,
Pennsylvania, March, April and May 1933.

		Percentage of average daily sales for the week						
Type of sale		Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
<u>Milk</u>								
Retail	102.35	97.81	99.99	100.04	99.71	99.69	100.40	
Wholesale	65.86	104.23	102.25	105.63	105.70	111.06	105.25	
Total	94.94	99.17	100.80	101.15	100.76	102.97	101.09	
<u>Cream</u>								
Retail	138.75	87.51	97.81	96.18	90.10	88.15	101.52	
Wholesale	88.92	95.35	93.73	102.59	93.77	106.94	118.20	
Total	111.75	93.14	95.16	98.23	92.46	99.07	110.19	

Compiled from "Distribution and Consumption of Milk in Williamsport, Pennsylvania," by
T. K. Cowden, Pennsylvania Agricultural Experiment Station Technical Paper
No. 615, November 8, 1933.

Holidays also exert a considerable influence upon milk and cream sales, since these are occasions for special activities. On certain of these days, notably during the summer, there is a considerable movement of people out of the city, while other holidays are feast days. In general, milk consumption appears to be somewhat decreased on holidays except for increases at Thanksgiving and Christmas. Sales of extra heavy cream at Christmas and Thanksgiving increase by over eighty percent. Data for the New York market are given in Table 15.

Temperature is also an important factor in short-time variations in the demand for milk. In general, an increase in temperature is associated with an increase in demand, and a decrease in temperature is associated with a decrease in demand. In the New York market it was found that temperature changes in winter are more marked than in summer but that a change of a given number of degrees produced about three ^{22/} times as great a change in summer as a similar change in the winter.

On the basis of the foregoing, it appears that a considerable volume of milk in excess of average daily sales must be brought to market in order to have a supply sufficient to cover daily variations in the demand for milk. Few data are available relative to the necessary size of this daily excess, hereinafter termed the operating reserve, but it appears to range from ten to twenty percent of average daily sales at least, and perhaps higher in some markets.

If the producers in the market so organize their service of supply to the distributors so as to remove from them entirely or even partly the necessity of carrying this "operating reserve", producers can secure a higher price for the delivered milk since the distributor has always available all the milk he needs for his fluid milk trade and is also relieved of the necessity of procuring his milk from a large number of individual producers and is under no necessity of taking milk, a portion of which must be disposed of in channels other than fluid milk. This is one of the services which operating producers' cooperative associations commonly provide distributors purchasing from them. They are thus able to sell distributors milk at a higher price than they are able to secure when distributors are not so serviced. There would thus arise what amounts to a class price for milk, distributors paying a certain price for the milk called for from the association and used for fluid purposes, with the association utilizing the remaining milk in the most profitable possible manner but intuses yielding somewhat lower returns than the fluid sales. The difference between the prices charged distributors for

^{22/} Ross, H. A., Some Factors Affecting the Demand for Milk and Cream in the Metropolitan Area of New York, United States Department of Agriculture Technical Bulletin No. 73, pp. 39-44.

Table 12. Daily fluctuation in wholesale sale of
pints of regular milk, Milwaukee, April
22-28, 1934.

Company	Percentage of average daily sales for the week						
	Sunday	Monday	Tuesday	Wed.	Thurs.	Friday	Saturday
	Percent	Percent	Percent	Percent	Percent	Percent	Percent
H	103.0	113.1	123.5	72.1	154.4	77.1	154.4
I	110.3	133.6	135.2	139.4	140.4	131.7	8.7
M	7.8	134.4	127.7	128.2	131.0	137.3	33.6
R	73.3	115.1	95.5	102.1	109.9	124.3	79.8
S	25.9	129.6	51.9	25.9	181.5	155.6	129.6
D	2.1	85.6	139.1	152.0	128.5	128.5	64.2
K	59.1	106.8	88.6	70.5	213.6	75.0	86.4
O	35.7	123.5	109.8	120.8	109.8	118.0	82.4
T	:	:	:	:	:	:	:
U	0.0	116.3	116.7	116.7	116.7	116.7	116.7
A	215.0	90.0	81.5	78.6	82.8	79.9	71.7
C	67.7	124.2	101.6	146.8	90.3	112.9	56.5
V	65.8	105.5	106.1	112.9	116.9	96.7	98.1
B	15.6	132.4	131.7	133.8	123.8	122.8	39.9
E	0.0	197.1	155.3	149.5	156.3	13.6	27.2
F	0.0	0.0	0.0	700.0	0.0	0.0	0.0
L	61.8	102.9	123.7	113.2	139.0	72.0	82.4
P	:	:	:	:	:	:	:
Q	:	:	:	:	:	:	:
Y	100.0	0.0	0.0	200.0	0.0	200.0	200.0
Weighted:	:	:	:	:	:	:	:
average:	:	:	:	:	:	:	:
for all:	69.6	119.1	115.6	116.5	117.6	112.6	49.0
dealers:	:	:	:	:	:	:	:

Compiled from unpublished data secured during the Milwaukee Milk Survey conducted by the Federal Emergency Relief Administration, and Wisconsin Emergency Relief Administration under the direction of the Agricultural Adjustment Administration.

Table 13. Daily fluctuation in retail sales of quarts of regular milk, Milwaukee, April 22-28, 1934

Company	Percentage of average daily sales for the week						
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	Percent	Percent	Percent	Percent	Percent	Percent	Percent
H	91.9	96.2	103.0	98.6	103.6	102.9	103.8
I	99.6	97.6	100.2	100.2	100.7	100.8	100.9
M	100.2	96.2	99.0	100.1	100.9	99.7	103.9
R	102.2	96.5	101.7	98.8	100.8	98.0	102.0
S	99.3	97.4	102.2	98.3	98.7	98.7	104.4
D	96.4	101.1	95.8	102.8	102.7	97.8	103.4
J	100.1	103.3	98.9	98.5	92.7	99.2	107.3
K	99.3	97.4	100.8	100.0	100.2	100.3	102.0
U	98.7	99.6	100.5	99.9	99.1	100.2	102.0
A	100.7	97.3	98.1	100.0	101.1	99.2	105.6
C	97.3	103.4	99.7	95.4	104.1	98.9	101.2
V	99.4	96.9	101.8	101.3	102.8	99.2	98.6
B	99.8	98.1	97.8	101.0	101.9	97.6	103.8
E	96.1	100.7	95.1	103.6	102.7	96.3	105.3
F	95.3	102.4	95.5	102.9	101.4	98.6	103.9
G	95.1	99.0	100.4	99.2	101.2	100.1	105.0
L	97.9	96.3	99.4	103.5	105.7	98.8	100.4
P	99.0	98.5	99.3	100.5	100.1	101.0	101.6
Q	95.9	98.9	99.3	96.5	103.9	99.9	102.6
Y	99.0	100.8	97.4	99.8	100.0	100.8	102.2
Weighted average for all dealers	99.7	97.9	98.4	100.4	101.3	99.0	103.3

Compiled from unpublished data secured during the Milwaukee Milk Survey conducted by the Federal Emergency Relief Administration and the Wisconsin Emergency Relief Administration under the direction of the Agricultural Adjustment Administration.

Table 14. Daily fluctuation in wholesale sales of
quarts of 18% cream, Milwaukee, April 22-
28, 1934

Company	Percentage of average daily sales for the week						
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	Percent	Percent	Percent	Percent	Percent	Percent	Percent
H	: 35.9:	89.7:	80.7 :	107.7 :	116.7 :	98.7:	170.6
I	: 78.4:	106.4:	95.2 :	89.6 :	95.2 :	117.6:	117.6
M	: 80.6:	115.1:	96.7 :	71.4 :	87.5 :	78.3:	170.4
R	: 100.0:	76.5:	100.0 :	70.6 :	129.4 :	94.1:	129.4
S	: 116.7:	58.3:	116.7 :	58.2 :	116.7 :	116.7:	116.7
	:	:	:	:	:	:	:
D	: 0.0:	0.0:	0.0 :	0.0 :	700.0 :	0.0:	0.0
J	: 33.3:	166.7:	66.7 :	100.0 :	100.0 :	200.0:	33.3
K	: 83.1:	99.0:	87.9 :	95.8 :	97.4 :	111.7:	125.1
O	: 9.5:	131.8:	113.0 :	116.1 :	103.6 :	119.5:	106.7
T	:	:	:	:	:	:	:
U	: 53.8:	107.7:	107.7 :	107.7 :	107.7 :	107.7:	107.7
	:	:	:	:	:	:	:
A	: 97.6:	91.0:	101.6 :	88.5 :	101.6 :	90.7:	129.2
C	: 65.1:	114.0:	146.4 :	97.7 :	97.7 :	65.1:	114.0
V	: 75.4:	86.2:	53.8 :	96.9 :	96.9 :	118.5:	172.3
	:	:	:	:	:	:	:
B	: 72.6:	103.6:	94.7 :	108.9 :	95.8 :	101.8:	122.6
E	: 89.1:	50.9:	127.3 :	101.8 :	101.8 :	76.4:	152.7
F	: 116.7:	58.3:	116.7 :	116.7 :	0.0 :	58.3:	233.3
	:	:	:	:	:	:	:
G	: 94.2:	67.4:	114.4 :	107.7 :	107.7 :	94.2:	114.4
L	: 311.1:	0.0:	77.8 :	0.0 :	77.8 :	155.5:	77.8
P	: 41.2:	41.2:	41.2 :	123.5 :	41.2 :	82.4:	329.3
Q	: 0.0:	0.0:	0.0 :	0.0 :	0.0 :	700.0:	0.0
Y	: 140.0:	93.3:	93.3 :	93.3 :	186.8 :	0.0:	93.3
	:	:	:	:	:	:	:
Weighted	:	:	:	:	:	:	:
Average	: 77.0:	99.9:	95.9 :	97.7 :	98.8 :	101.5:	129.2
all deal-	:	:	:	:	:	:	:
ers	:	:	:	:	:	:	:

Compiled from unpublished data secured during the Milwaukee Milk Survey conducted by the Federal Emergency Relief Administration and the Wisconsin Emergency Relief Administration under the direction of the Agricultural Adjustment Administration.

Table 15. Daily fluctuation in retail sales of
half pints of 18% cream, Milwaukee,
April 22-28, 1934

Company	Percentage of average daily sales for the week						
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	Percent	Percent	Percent	Percent	Percent	Percent	Percent
H	119.5	85.4	97.4	119.5	78.5	100.7	99.0
M	152.0	74.7	92.8	93.1	90.7	89.6	107.1
R	206.1	76.4	84.0	81.5	89.1	76.4	86.5
S	301.3	35.4	53.2	57.6	79.7	66.5	106.3
D ^{1/}	211.7	78.4	96.3	0.0	88.0	101.8	123.8
K ^{2/}	165.6	82.8	90.3	94.1	86.6	82.8	97.8
E	164.0	84.0	89.3	97.3	73.4	84.0	108.0
G	95.5	190.8	0.0	79.5	143.2	95.5	95.5
Weighted:							
average	159.9	76.5	91.3	88.0	88.6	89.3	106.4
all dealers							

Compiled from unpublished data secured during the Milwaukee Milk Survey conducted by the Federal Emergency Relief Administration and the Wisconsin Emergency Relief Administration under the direction of the Agricultural Adjustment Administration.

1/ 1%

2/ 1 $\frac{1}{2}$ %

Table 16. Effect of holidays on sales of retail milk and cream in the New York Metropolitan Area - 1924.

Product	Change in sales ^{1/}											
	New Year's Day	Lincoln's Birthday	Washington's Birth-day	Easter	Pass-over	Memorial Day	Fourth of July	Labor Day	Yom Kippur	Thanksgiving	Christmas	
Per-cent	Per-cent	Per-cent	Per-cent	Per-cent	Per-cent	Per-cent	Per-cent	Per-cent	Per-cent	Per-cent	Per-cent	
Quarts - Grade B	-1.4	+1.2	- .6	0	- 1.5	- 1.2	- 2.4	- 6.0	0	+ .6	+ 3.0	
Quarts - Grade A	0	- 1.2	- .6	- .6	- 1.4	- 1.3	- 2.4	- 4.8	0	+ .6	+ 1.2	
Quarts - Certified	- 3.0	- 1.8	- 2.9	.0	- 1.8	- 1.2	- 1.8	- 6.5	- .6	- 1.2	- 1.8	
Pints - Grade B	-24.0	+1.4	-20.7	+1.6	- 2.6	- 26.5	-28.3	-29.8	-5.5	-25.1	-26.1	
Extra heavy cream	+44.0	+ 2.1	+11.1	+2.8	- .6	+23.3	+27.8	- 7.8	-1.9	+83.4	+83.7	

Compiled from "Some Factors Affecting the Demand for Milk and Cream in the Metropolitan Area of New York," United States Department of Agriculture, Technical Bulletin No. 73 - June, 1928.

^{1/} Percentage change from the average corrected sales for the three days preceding and the three days following the holiday.

milk that is sold by them as fluid milk and the price the association receives for milk in other uses is, other factors being the same, the premium distributors are willing to pay for milk when such milk is furnished them in conformance with their daily needs.

Although there may be other factors that, in a particular market, also contribute to the development of a system of class prices, the foregoing treatment suffices to explain the more important considerations obtaining that, taken as a whole, lead to the development of class prices in most important milk markets.

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A P P E N D I X

Table 17. Index numbers of seasonal variation in fluid milk sales by distributors purchasing from cooperative associations.

	Baltimore	Boston	Twin Cities
	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>
January	97.7	96.9	98.8
February	98.6	97.6	101.0
March	100.2	98.6	101.4
April	100.4	97.2	101.8
May	103.1	99.5	99.5
June	101.4	102.8	98.1
July	99.0	106.8	98.0
August	96.4	103.1	99.1
September	100.5	100.5	100.1
October	103.0	100.4	102.5
November	101.0	100.7	101.7
December	98.7	95.9	98.0
Average	100.0	100.0	100.0

Index numbers were calculated by the median-link-relative method from data of fluid milk sales, omitting those months in which price changes occurred. For basic data used in computing the index for Baltimore see tables 17 and 18; for Boston, see tables 19 and 20; and for Twin Cities, see tables 21 and 22.

Table 18. Fluid milk sales of Maryland State Dairymen's Association, December 1923-December 1931.

Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
	: 000	: 000	: 000	: 000	: 000	: 000	: 000	: 000	: 000	: 000	: 000	: 000	: 000
	gallons:gallons:gallons:gallons:gallons:gallons:gallons:gallons:gallons:gallons:gallons:gallons:gallons:gallons												
1923	:	:	:	:	:	:	:	:	:	:	:	:	:
1924	1,171	1,207	1,230	1,257	1,262	1,254	1,262	1,287	1,313	1,367	1,368	1,348	1,275
1925	1,347	1,388	1,428	1,445	1,489	1,552	1,491	1,439	1,525	1,578	1,508	1,490	1,468
1926	1,476	1,489	1,517	1,530	1,592	1,570	1,539	1,490	1,544	1,582	1,510	1,481	1,525
1927	1,480	1,512	1,549	1,536	1,562	1,558	1,538	1,485	1,554	1,598	1,562	1,558	1,541
1928	1,527	1,549	1,571	1,549	1,596	1,562	1,517	1,481	1,506	1,575	1,555	1,514	1,542
1929	1,517	1,526	1,547	1,551	1,673	1,566	1,528	1,495	1,571	1,575	1,555	1,510	1,551
1930	1,497	1,507	1,543	1,534	1,592	1,561	1,517	1,493	1,587	1,469	1,509	1,465	1,523
1931	1,434	1,450	1,431	1,470	1,491	1,462	1,435	1,407	1,468	1,457	1,414	1,376	1,441

Compiled from "History of Maryland State Dairymen's Association," Appendix Table VI.

1/ Adjusted to 30 day month.

Table 19. Retail prices of milk per quart delivered in Baltimore, 1924-1931

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
	Cents												
1924	13	13	13	13	13	13	13	13	13	13	13	13	13
1925	13	13	13	13	13	13	13	13	13	13	13	13	13
1926	13	13	13	13	13	13	13	13	13	13	13	13	13
1927	14	14	14	14	14	14	14	14	14	14	14	14	14
1928	14	14	14	14	14	14	14	14	14	14	14	14	14
1929	14	14	14	14	14	14	14	14	14	14	14	14	14
1930	14	14	14	14	14	14	14	14	14	14	14	14	14
1931	14	14	14	13	12	12	12	12	12	12	12	12	12

Compiled from reports of the United States Department of Labor; Bureau of Labor Statistics.

Table 20. Monthly fluid milk sales¹/by large dealers in Boston, 1922-1931.

Year:	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Mil.													
pounds													
1922:	21.4	21.7	22.0	21.5	22.8	23.9	23.4	22.9	22.6	22.5	22.7	21.3	22.4
1923:	22.0	22.4	23.0	22.6	23.6	25.6	24.5	23.7	23.2	23.6	23.5	22.6	23.4
1924:	22.9	23.1	23.1	22.5	25.2	26.2	27.2	26.1	24.6	24.1	24.4	23.8	24.7
1925:	24.2	24.6	25.2	25.2	25.5	28.0	27.2	26.3	25.7	25.8	26.1	25.4	25.8
1926:	25.9	26.1	26.5	26.5	27.0	27.6	28.9	27.5	27.2	28.4	28.4	26.6	27.2
1927:	27.2	27.3	27.6	28.1	27.9	29.0	29.8	28.2	28.2	28.7	28.1	27.8	28.3
1928:	28.7	29.0	29.5	28.9	29.5	29.9	31.3	31.4	29.4	30.6	31.1	29.8	29.9
1929:	30.5	30.8	31.5	31.0	32.0	32.8	32.8	31.7	31.0	30.4	30.7	29.1	31.2
1930:	29.6	30.0	30.4	30.2	31.2	31.4	30.5	29.7	30.6	29.7	29.1	28.2	30.1
1931:	30.0	29.6	30.2	29.9	31.8	30.2	31.6	30.6	30.1	30.3	29.7	28.5	30.2

1/ Adjusted to thirty-day month.

Data supplied by W. H. Bronson of the New England Milk Producers' Association.

Table 21. Retail prices of milk per quart delivered in
Boston, 1922-1931.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Cents											
1922	13.5	13.5	13.5	12.5	12.5	12.5	13.5	13.5	13.5	14.5	14.5	14.5
1923	14.5	14.5	14.5	13.5	13.5	13.5	14.0	14.0	14.0	14.5	14.5	14.5
1924	14.5	13.5	12.5	12.0	12.0	12.0	12.5	13.5	14.5	14.5	14.5	14.5
1925	14.5	14.5	13.5	13.5	13.0	13.0	14.0	14.5	14.5	14.5	14.5	14.5
1926	14.5	14.5	14.5	14.5	14.5	13.5	14.5	14.5	14.5	14.5	14.5	14.0
1927	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	15.0	15.5	15.5	15.0
1928	16.0	15.5	15.5	14.5	14.5	14.5	14.5	15.5	15.5	15.5	15.5	15.5
1929	15.5	15.5	15.5	15.5	15.5	14.5	14.5	15.5	15.5	15.5	15.5	15.5
1930	15.5	15.5	15.5	15.5	14.5	14.5	14.5	15.5	15.5	15.5	15.5	13.5
1931	13.5	13.5	12.5	12.5	12.5	12.5	12.5	13.5	13.5	13.5	13.5	10.0

Data supplied by J. H. Bronson of the New England Milk Producers' Association.

Note: During the period April 1, 1923 to September 4, 1927 some dealer's prices were 1/2 cent higher than the prices indicated above.

Table 22. Fluid milk sales ^{1/} to distributors by Twin City
Milk Producers' Association, 1924-1932.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
:	:	:	:	:	:	:	:	:	:	:	:	:
: 000	: 000	: 000	: 000	: 000	: 000	: 000	: 000	: 000	: 000	: 000	: 000	: 000
<u>pounds:pounds:pounds:pounds:pounds:pounds:pounds:pounds:pounds:pounds:pounds:pounds:pounds</u>												
1924:11,098:11,541:11,279:11,876:11,720:11,814:11,871:11,799:11,782:12,318:12,225:11,343	:	:	:	:	:	:	:	:	:	:	:	:
1925:11,958:12,265:12,572:12,710:11,720:12,572:12,210:12,570:13,052:12,492:12,421:11,861	:	:	:	:	:	:	:	:	:	:	:	:
1926:12,079:12,178:12,246:12,331:12,522:12,170:12,004:11,990:11,988:12,368:12,293:12,062	:	:	:	:	:	:	:	:	:	:	:	:
1927:12,246:12,485:13,775:12,274:12,005:11,912:11,769:12,111:12,737:12,438:12,608:12,100	:	:	:	:	:	:	:	:	:	:	:	:
1928:12,480:12,634:12,782:12,729:12,918:12,238:12,270:12,436:12,439:13,607:13,406:12,644	:	:	:	:	:	:	:	:	:	:	:	:
1929:12,785:12,942:12,968:13,086:12,820:12,437:12,432:12,684:13,053:13,495:13,433:12,980	:	:	:	:	:	:	:	:	:	:	:	:
1930:13,256:13,571:13,648:13,646:13,119:13,004:13,142:13,097:13,346:13,543:13,487:12,860	:	:	:	:	:	:	:	:	:	:	:	:
1931:12,961:13,277:13,201:13,268:13,821:12,842:12,993:12,162:12,563:12,308:12,724:12,065	:	:	:	:	:	:	:	:	:	:	:	:
1932:12,203:12,543:12,543:12,724:12,288:12,534:12,571:12,717:12,771:12,612:12,093:11,862	:	:	:	:	:	:	:	:	:	:	:	:

Computed from data in National Cooperative Milk Producers' Federation, History Series
No. 7. "Twin City Milk Producers' Association." Appendix Table IV.

^{1/} Adjusted to 30-day month.

Table 23. Retail prices of milk per quart
in Twin Cities, 1924-1932.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
1924	11-12	11-12	11-12	10	10	10	10	11	11	11	11	11
1925	11	11	11	11	11	11	11	11	11	12	12	12
1926	11-12	11	11	11	11	11	11	11	11	11	11	11
1927	10-11 ^{1/}	11	11	11	11	11	11	11	11	11	11	11
1928	12	12	12	12	12	12	12	12	12	12	12	12
1929	12	12	12	12	12	12	12	12	12	12	12	12
1930	11	11	11	11	11	11	11	11	11	11	11	10
1931	10	10	10	10	10	10	10	10	10	10	10	9-10
1932	9-10	3-10	8-9	8-9	8-9	8-9	8-9	8	8	8	8	8

Data supplied by Twin City Milk Producers' Association.

^{1/} In the discussion in the text of this paper the reported change in price during December 1926 and January 1927 was not considered. The Bureau of Labor Statistics reported no change in the price for these months for St. Paul and no change occurred in prices paid to producers.

Table 24. Sales and retail prices of fluid milk in the
Boston Sales Area.

Year and month					Estimated:		Retail	Retail:	Class I
	Class I sales of milk	Milk reported: as percent of estimated total sales	Estimated: total sales	average Class I sales	delivered: daily sales	price per quart	store price per quart	price per quart	cwt. of 3.7% milk f.o.b. City
	<u>000 lbs.</u>	<u>Percent</u>	<u>000 lbs.</u>	<u>000 lbs.</u>	<u>Cents</u>	<u>Cents</u>	<u>Cents</u>	<u>Dollars</u>	
1934									
April	41,549	89.5	46,190	1,540	11	10		2.95	
May	44,599	89.0	50,111	1,616	11	10		2.95	
June	43,632	89.5	48,751	1,625	11	10		2.95	
July	48,117	89.5	53,762	1,734	11	10		2.95	
August	44,735	90.0	49,706	1,603	11	10		2.95	
September	42,847	90.0	47,608	1,587	11	10		2.95	
October	44,729	90.0	49,699	1,603	12	11		3.26	
November	43,482	88.5	49,132	1,638	12	11		3.26	
December	42,698	88.0	48,520	1,565	12	11		3.26	
1935									
January	43,207	88.0	49,099	1,584	12	11		3.26	
February	38,231	87.0	43,944	1,569	12	11		3.30	
March	42,573	86.0	49,503	1,597	13	12		3.49	
April	40,122	86.0	46,653	1,555	13	12		3.49	
April to September									
				1,618	11				
October to February									
% change				1,592	12				
				-1.6	+9.1				
March and April									
% change				1,576	13				
				-1.0	+8.3				

Sales and Class I price compiled from reports of Market Administrator.

Retail prices compiled from reports of U. S. Department of Agriculture Market News Service.

Table 25. Sales and retail prices of fluid milk in the Detroit Sales Area.

Year and month	Milk			Daily			Class I		
	Class I	reported sales	as percent of milk	Estimated total sales	Estimated sales	Retail average daily sales	Retail adjusted for sea-sonal variation	Retail price per quart	price of milk per quart f.o.b.Ci
	: 000 lbs.	: Percent	: 000 lbs.	: 000 lbs.	: 000 lbs.	: Cents	: Cents	: Dollars	
1934									
April	35,448	90		39,387	1,313	1,275	10	10	2.02
May	37,853	98		38,626	1,246	1,217	10	10	2.02
June	35,957	99		36,320	1,211	1,172	10	10	2.15
July	35,496	98		36,220	1,168	1,180	11	11	2.25
August	34,344	98		35,045	1,130	1,137	11	11	2.25
September	33,731	97		34,774	1,159	1,175	11	11	2.25
October	34,776	98		35,486	1,145	1,128	11	11	2.25
November	33,419	98		34,101	1,170	1,195	11	11	2.38
December	33,671	98		34,358	1,108	1,143	11	11	2.27
1935									
January	34,804	95		36,636	1,182	1,231	11	11	2.25
February	31,948	98		32,600	1,141	1,146	11	11	2.40
March	35,868	98		36,600	1,181	1,153	12	12	2.48
April to June					1,257	1,221	10		
July to February					1,150	1,167	11		
% change					-8.5	-4.4	+10.0		
March					1,181	1,153	12		
% change					+2.7	-1.2	+9.1		

Sales and Class I price: Compiled from reports of Market Administrator.

Retail prices: Compiled from reports of the United States Department of Agriculture Market News Service.

1/ See test for index used.

Table 26. Sales and retail prices of fluid milk
in the Evansville Sales Area.

Year and month	Milk re-			Estimated		Retail	Retail	Class I
	Class I	ported as	Estimated	average	deliv-	store	price per	
	sales of	percent of	total	daily	ered	price	pound	
	butter-	estimated	Class I	Class I	price	per	butterfat	
	fat	total	sales of	sales of	per	: quart	f.o.b.	
			butterfat	milk	quart	:		
				equivalent		:		
	Pounds	Percent	Pounds	Pounds	Cents	Cents	Cents	
1934	:	:	:	:	:	:	:	
March	55,017	90	61,130	51,893	8.32	8.2	48	
April	47,589	90	52,877	46,383	9	9	48	
May	46,979	87	53,999	45,840	9	8-9	48	
June	46,210	85	54,365	47,689	9	8-9	48	
July	47,767	95	50,281	42,683	9	8-9	48	
August	45,008	90	50,009	42,452	9	8-9	48	
September	40,557	88.6	45,775	40,154	9	8-9	48	
October	42,407	87	48,744	41,404	9.5	9-10	48	
November	41,153	89	46,239	40,561	9.5	9-10	51.5	
December	41,184	88	46,800	39,728	9.5	9-10	53	
	:	:	:	:	:	:	:	
1935	:	:	:	:	:	:	:	
January	43,351	90	48,168	40,890	9.5	9-10	53	
February	40,059	88	45,522	42,784	9.5	9-10	53	
March	45,090	89	50,663	44,441	9.5	9-10	53	
	:	:	:	:	:	:	:	
May to Sept.:	:	:	:	43,764	9	9	53	
	:	:	:	:	:	:	:	
Oct. to Mar.:	:	:	:	41,635	9.5	9.5	53	
Percent change	:	:	:	-4.9	+ 5.6	+ 5.6	53	
	:	:	:	:	:	:	:	

NOTE: Percentage changes from March sales and prices were not calculated since sales during that month appear to have been unduly high.

Sales and Class I prices: Compiled from reports of Market Administrator.

Retail prices: Compiled from reports of the United States Department of Agriculture Market News Service.

Table 27. - Sales and retail prices of fluid milk in the
Grand Rapids Sales Area.

Year :	Class I Sales	Milk report- ed as per- cent of es- timated to- tal Class I Sales	Estimated total Sales	Average price per cwt. of Class I: sales	Estimated delivered:store price per:price per quart sales	Retail: Class I f.o.b. quart
	Pounds	Percent	Pounds	Pounds	Cents	Cents
<u>1934</u>						
August	3,850,687	97.9	3,933,286	126,880	9	9.0
September	3,809,520	99.7	3,820,933	127,366	9	9.5
October	3,920,693	99.0	3,960,296	127,751	10	10.0
November	3,758,861	99.0	3,796,829	126,561	10	10.0
December	3,848,021	99.6	3,863,475	124,628	10	10.0
<u>1935</u>						
January	3,906,824	99.0	3,946,287	127,300	10	10.0
February	3,575,805	99.0	3,611,924	128,997	10	10.0
March	3,928,662	99.0	3,968,345	128,011	10	10.0
August & September	3,906,824	99.0	3,946,287	127,123	9	9.0
October to: March	3,928,662	99.0	3,968,345	127,208	10	10.0
% Change					+ 11.1	

Sales and Class I price compiled from Reports of Market Administrator.
Retail prices compiled from reports of U. S. Department of Agriculture Market
News Service

Table 28. Sales and retail prices of fluid milk
in the Kalamazoo Sales Area

Year	Month	Class I Sales of Milk and month	Milk re- ported as percent of estima- ted total:	Estimated Class I Sales	Retail price per cwt. of milk f.o.b. store	Class I prices per qt.	Retail price per qt.
		:Pounds	:Percent	:Pounds	:Pounds	:Cents	: Dollars
<u>1934</u>							
	July	1,236,034	98	1,261,259	40,686	10	1.85
	August	1,053,642	98	1,075,145	34,682	10	1.85
	Sept.	1,043,354	98	1,064,647	35,488	10	1.85
	October	1,078,968	98	1,100,987	35,516	10	1.85
	November	1,062,866	95	1,118,806	37,294	10	1.85
	December	1,145,373	95	1,205,656	38,892	8	1.85
		:	:	:	:	:	:
<u>1935</u>							
	January	1,211,198	97	1,274,945	41,127	8	1.85
	February	1,144,550	98	1,179,948	42,141	8	1.85
	March	1,196,868	95	1,221,294	39,397	10	2.00
		:	:	:	:	:	:
	July to	:	:	:	:	:	:
	November	:	:	36,733	10	:	
	December	:	:	:	:	:	
	to Feb.	:	:	40,720	8	:	
	% Change	:	:	+ 10.9	-20.0	:	
		:	:	:	:	:	
	March	:	:	39,397	10	:	
	% Change	:	:	-3.2	+ 25.0	:	

Sales and Class I Prices compiled from reports of Market Administrator.
Retail prices compiled from reports of U. S. Department of Agriculture Market News Service.

Table 29. Sales and retail prices of fluid milk in the St. Louis Sales Area.

Year and month	: Class I sales of milk	: Milk re- ported as percent of estimated total Class I sales	: Estimated total sales	: Estimated average Class I sales	: Index of av- erage Class I sales	: Retail deliver- ed price per cwt. of 3.5% milk f.o.b. city
	: 000 Lbs.	: Percent	: 000 Lbs.	: 000 Lbs.	: Per- cent	: Cents : Dollars
<u>1934</u>	:	:	:	:	:	:
April	: 16,824	: 99.8	: 16,858	: 562	: 102	: 11 : 1.85
May	: 18,091	: 100.0	: 18,091	: 584	: 106	: 11 : 1.85
June	: 17,928	: 100.0	: 17,928	: 598	: 109	: 11 : 2.00
July	: 18,229	: 99.7	: 18,284	: 590	: 107	: 11 : 2.00
August	: 17,482	: 99.8	: 17,517	: 565	: 102	: 11 : 2.20
September	: 16,167	: 99.7	: 16,216	: 541	: 98	: 11 : 2.35
October	: 16,923	: 99.5	: 17,008	: 549	: 99	: 11 : 2.35
November	: 15,676	: 97.9	: 16,012	: 534	: 97	: 11 : 2.18
December	: 15,769	: 99.8	: 15,801	: 510	: 92	: 11 : 2.00
<u>1935</u>	:	:	:	:	:	:
January	: 15,952	: 99.6	: 16,016	: 517	: 94	: 11 : 2.00
February	: 14,709	: 99.5	: 14,783	: 528	: 96	: 11 : 2.00
March	: 16,783	: 99.9	: 16,800	: 542	: 98	: 11 : 2.22
Average	:	:	:	: 552	: 100	:
	:	:	:	:	:	:

Sales and Class I prices: Compiled from Reports of Market Administrator.

Retail prices: Compiled from reports of the United States Department of Agriculture Market News Service.

